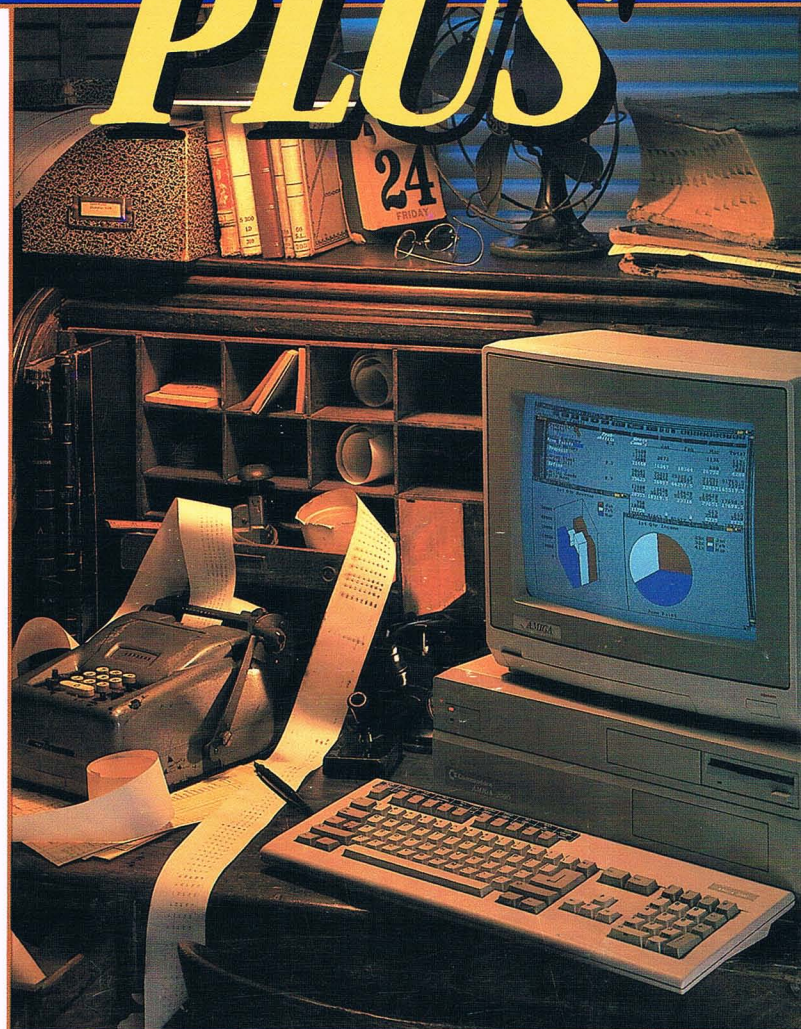


MAXIPLAN PLUS

- Spreadsheet Analysis
- Database Management
- Business Graphics
- Macro Programming Facility
for Informed Business Solutions

VOTED BEST
SPREADSHEET
AMIGA 1986



Published by **Oxxi**
Developed by Intuitive Technologies

MaxiPlan PlusTM

The Advanced Amiga Spreadsheet

- **Spreadsheet Analysis**
- **Database Management**
- **Business Graphics**
- **Macro Programs**

For Informed Business Solutions

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MaxiPlan OVERVIEW

MaxiPlan™ was conceived to be the most Amiga-like spreadsheet program possible. The Amiga is known for outstanding graphic capabilities, multitasking, multiwindows, and sound. MaxiPlan has adopted all of these features to make spreadsheet analysis on the Amiga both easy and beneficial to the business user with its many sophisticated features. To quote Erwin Bobo of Amiga Buyer's Guide, "MaxiPlan...That's power as well as ease-of-use. Those parameters sum up the intent of MaxiPlan. Along the way it (also) succeeds in being a pleasure to work with."

Our two versions of MaxiPlan™, MaxiPlan 500™ and MaxiPlan Plus™, offer many features not found on any other spreadsheet on any other machine. Both incorporate the custom color palette, multitasking, multiwindows, multiple command interface, and voice output of the Amiga. Each Cell or any Range can be formatted for color, type style, and sound. Formats can be made to change dependent on data or analytical results.

With a few mouse clicks, your results can be displayed in any of over ten Chart styles including X-Y, 3D Bar, 3D Pie, Exploding Pie, Step, Area, Line, Hi-Lo, etc. MaxiPlan allows two-way dynamic linkage of data and Charts as well.

MaxiPlan's database capabilities enable the user to create up to a combination of 64 different databases and criteria specifications per Worksheet. Any number of Fields can be incorporated in simultaneous ascending and descending sorts.

MaxiPlan 500 includes all of the above features in a format optimized to run in a 512K environment. MaxiPlan Plus also includes the above features along with a Macro Language facility similar to Microsoft Excel®. MaxiPlan Plus has been run in 512K, with *severe* limitations, but we strongly recommend 1 meg of memory for best performance.

MaxiPlan Plus incorporates four analytical tools:

- Spreadsheet tools for calculations and modeling
- Graphic tools for visual depiction of analytical results
- Database tools for sorting and extracting
- Macro Language for application generation

And with 512 Columns and 65,530 Rows there is plenty of room for extensive Databases or Worksheets.

MaxiPlan Spreadsheet Tools

As a spreadsheet, MaxiPlan offers a multitude of methods to interact with the program. In addition, it is the only spreadsheet program that allows for complete mouse input of formulas and functions. Major spreadsheet features include:

- **Multiple User interfaces including:**
 - Function Keys
 - Pull Down Menus
 - Requesters
 - Icons
 - Cursor Keys
 - Mouse
 - Control Keys
- **Multiple Windows for Cut/Copy/Paste within and between Worksheets**
- **Named Ranges**
- **Password Protection**
- **Zoom Mode for the Big Picture**
- **Linking between Worksheets**
- **Lotus 1-2-3 compatibility**
- **Written or spoken Cell Notes**
- **Over 70 built-in Functions**
- **8 color custom palette**
- **Bold, Italics, Underline and Color Type Styles**
- **Formulas can be completely entered with the mouse**
- **Actively Used Rows and Columns Determines Worksheet Size for easy Scrolling**

MaxiPlan Chart Tools

Graphic representation of data by MaxiPlan is characterized by ease of use. An entire Menu is devoted to designing Charts. Chart features include:

- **Any combination of 8 Charts per Worksheet**
- **Chart styles: X-Y (scatter), Pie, Bar, Line, and Area**
- **Dynamic linkage of Data and Charts for instant updates**
- **3-D Bar, 3-D pie Charts, Exploding Pie Charts**
- **IFF Files for export to Word Processing and Paint Programs**

MaxiPlan Database Tools

As a Database, MaxiPlan has several outstanding features. Any set of Rows and Columns can be designated as a Database. Records, or Rows, can be sorted by simultaneous ascending or descending ranks on any number of Columns and any order. Database features include:

- Access up to 63 user defined Databases per Worksheet
- Sorting of Records by up to 63 different Criteria per Database
- Records can be selectively calculated
- Specific Records can be extracted and copied elsewhere on the Worksheet
- Named references to Databases and Criteria for ease of use

More Power with Macro Language

The Plus version of MaxiPlan incorporates the power of Microsoft Excel® like Macro Language. This language allows you to

- automate complicated Worksheet activities
- create templates for data entry
- design interactive demos
- set up a conditional analysis based on prior data
- exchange data between Worksheets
- maintain Mail Lists
- automatic creation and printing of invoices
- incorporate Text only files from other Amiga programs with MaxiPlan.

The Macro Language features of MaxiPlan Plus include:

- Up to 64 macros can be defined per Macrosheet
- Automatic generation of macros under Record Mode
- Over 95 Macro Functions in the Language

In addition, MaxiPlan Plus comes with Utilities for mail merging and print spooling.

The following Chapter is an introduction to MaxiPlan Tutorial and Reference Guide. The Tutorial section offers instruction on how to use MaxiPlan, while the Reference section gives details on Commands and Functions.

All users of MaxiPlan should review how to enter MaxiPlan in the chapter entitled "ENTERING MaxiPlan: THE CONTROL WINDOW", and then move onto a description of the MaxiPlan Worksheet window in section "THE MaxiPlan WORKSHEET WINDOW".

Less experienced users should then turn to "WORKSHEET BASICS", and then go over each of the lessons in turn. More experienced users can review the chapter entitled "ADVANCED SAMPLE WORKSHEET". This gives a quick flavor for how to use MaxiPlan, but is not intended to substitute for the remainder of the manual.

Chapter 2

INTRODUCTION

MaxiPlan has been designed to be easy for the first time spreadsheet user to learn while not sacrificing the power requirements of the sophisticated spreadsheet analyst.

This Introduction is intended to only cover the information that is useful to know before entering MaxiPlan as well as be a brief discussion on MaxiPlan's conventions. The remainder of this manual goes into much greater depth on the capabilities of MaxiPlan.

In the following chapter you will build a sample spreadsheet, or Worksheet in MaxiPlan terminology. You will find MaxiPlan so easy to learn that in just a few minutes you will be able to create your first Worksheet. You will then be able to see applications for MaxiPlan Worksheets in your everyday computer work.

Once the Worksheet is designed, you will then ask yourself your first "What if?", that is what will happen to the Worksheet if a number is changed or an assumption for a calculation altered.

Before Getting Started

1. MaxiPlan is **NOT COPY PROTECTED**. Before using the Program Disk and the Data/Utilities Disk make backup copies. See your Amiga Manual, Introduction to Amiga, for instructions on how to Copy Disks.
2. Once you have made your backup copies, put your original Program Disk and Data/Utilities Disk away for safe keeping.
3. Use your backup copy of the Program Disk to go through the examples discussed in this chapter as well as the remainder of this manual.
4. The MaxiPlan Program Disk is a bootable disk. Thus your backup copy of the Program Disk can be inserted into the computer rather than the Workbench Disk.
5. Since you will need to print your Worksheet as part of the Tutorial, you should make sure your printer and your Amiga have been properly configured together. Under the Workbench is a Program called Preferences. This Program contains installation parameters for setting up the computer to work with your printer. Again see Introduction to Amiga for further instructions on how to set up Preferences for your printer.

6. Included in the MaxiPlan package are two Function Key Command Strips. One is for the Amiga 500 and 1000, and another for the Amiga 2000. Be sure to put the Function Key Command Strip across the top of the keyboard to help you remember the correct action or command for each Function Key.

MaxiPlan's Conventions

MaxiPlan has a forgiving nature, but it does require certain consistent behavior on your part. It has been our experience that the best way to learn is to start using MaxiPlan now, so after reviewing this section turn to the next Chapter: "UP AND RUNNING IN TEN MINUTES".

Mouse Buttons

The Amiga mouse comes with a left and right mouse button. When using MaxiPlan, the Mouse buttons function as follows:

Menu Button (Right):

Used to pull down Menus and to Select Menu Items and Submenu Items by positioning the Pointer within the Menu or Submenu

Select Button (Left):

Used to click on icons, select file names in Requester windows, select or highlight Ranges, activate Scroll Bars, click on OK or Exit buttons for Requesters, activate Window Sizing Gadget, clicking on Window Close Gadget.

It is possible to **select multiple Menu Items** using both mouse buttons. You should press the Menu (right) mouse button to pull down the Menu and move the highlight stripe to the Menu Item. While pressing the right mouse button, press the Select (left) mouse button successively on the Menu Items to be selected.

Active Cell versus the Cursor

The Active Cell is the site of all activity on the Worksheet. It is the Cell that is highlighted when selected with the left mouse button.

In contrast, the Cursor is the site for editing the Cell Contents Display of the Active Cell. To activate the Cursor, the Pointer must be placed in the Cell Contents Display and the left mouse button depressed, or simply start keying in information. The data keyed into the Cell Contents Display is accepted by pressing the RETURN key. The result of the entry is then stored and displayed in the Active Cell.

The following illustration points out the location of some of MaxiPlan's tools on the Worksheet window.

- click on the on the word NORM in the upper left-hand corner of the screen
- while depressing the Shift Key click on the Cell again that is the lower right-hand Cell of the Range to be Selected

The entire Range is now highlighted and can be named, or inserted in a Function, or available for any other type of operation using selected Ranges.

Named Ranges, Databases, and Database Criteria

Each Worksheet gives you 64 named objects. Up to 63 Databases can be specified per Worksheet, if only one Database Criteria is defined. Conversely, 63 Database Criterion can be defined if only one Database is defined.

Each of these named objects is listed on the MaxiPlan Name Selector Requester. The MaxiPlan Name Selector is displayed by clicking on the Name Formula Button. You should review this list to make certain you are not using duplicate names for named objects associated with the same Worksheet. The second name will over write the first, and you may end up with incorrect results in your calculations that refer to the duplicate name.

Double Menus

Many MaxiPlan Menus include items with Submenus. For the most part, these Submenus tell you when a particular setting is on or off. However, as you get familiar with MaxiPlan you will learn they contain useful information and options.

If a Submenu is present, one of the Submenu Items must be chosen in order to activate the Menu Item. For example, the PRINT Menu Item on the PROJECT Menu has two items on its Submenu: Printer and File. One of these options must be selected in order to activate the Print Command.

Requesters

Requesters are message boxes used to convey information and to allow for user input such as the name of a Range. Each Requester has an OK button to either signify accepting a user entry or to indicate that the message has been read and noted. The CANCEL button or Close Gadget will remove the Requester from the display. Many Requesters can be likened to a Pop Up window. Some Requesters also have scroll bars for seeing more of the file listings or other information.

Formulas Begin with"="

All Formulas begin with an equal sign. If a Formula is to be inserted into a Cell, you must first key in an equal sign (or click on the Equal Sign Formula Button).

For example: =A2+5

Defining a Formula in a Cell allows the value of the Cell to change if one of the variables in the Formula changes. Thus every time A2 is changed, and a recalculation is performed, the results of the Formula will change.

If you simply insert $A2 + 5$ in a Cell, this will add 5 to the value in Cell A2 and store it in the Cell where $A2 + 5$ is keyed in. However, since it is not a Formula, only the value is stored. Should A2 be changed, the Cell will not be updated.

After you have taken a short tour of MaxiPlan, you will become much more familiar with its conventions. Remember, MaxiPlan is your tool. Try out its features as you go through the manual to make them part of your MaxiPlan repertoire of analytical tactics.



Chapter 3

UP AND RUNNING IN TEN MINUTES

Getting Started

In this chapter you will build a sample Worksheet. Once the Worksheet is designed, you will then ask yourself your first "What if?", that is, what effects will you have on the Worksheet if you change a number or alter an assumption for the calculations.

We assume your knowledge of your Amiga is limited to turning on the computer, and for Amiga 1000 users inserting the Kick Start Disk, and then the Workbench Disk. Thus a user with any level of spreadsheet experience will be able to follow our example.

Now, turn on your computer as described in your Amiga Manual. Since you will later be asked to print your Worksheet, you may wish to turn on your printer at this time as well.

- Place your MaxiPlan Program Disk in the Internal Drive of the computer and execute a soft boot. (Control-Right Amiga Key-Left Amiga Key)
- Double click on the MaxiPlan Disk Icon with the Select (left) mouse button
- Double click on the MaxiPlan Drawer Icon with the Select (left) mouse button
- Double click on the MaxiPlan Program Icon with the Select (left) mouse button

MaxiPlan is now being loaded, when this is completed you will see the Control Window. The Control Window displays the name and version of the program and programmer credits. Click on the OK button at the bottom of the screen to access the Control Window Menus.

To create a New Worksheet, follow the steps below.

- While holding down the right mouse button (called the Menu Button), move the Pointer across the top of MaxiPlan Screen. This will cause two pull down Menus to appear, one is called the CONTROL Menu and the other is called the PRINTER CONTROL Menu.
- While pulling down the CONTROL Menu, hold down the right mouse button, move the Pointer down the Menu. As the Pointer moves down the Menu a contrasting color stripe will highlight the various Menu Items. Select the Menu Item NEW WORKSHEET by stopping the highlight stripe over the words NEW WORKSHEET. Release the button, this will activate the Command NEW WORKSHEET.

You will be presented with a blank Worksheet. Let's take a few minutes to explore the Worksheet's parts.

Parts of the Worksheet Window

MaxiPlan's Worksheet is comprised of a grid or matrix of Cells. The Cells are formed by the intersection of Rows and Columns. There are 512 vertical Columns in MaxiPlan lettered A to SR.

The Rows number 1 to 32,260 allowing a maximum Worksheet of over 15 million possible Cells depending on the size of available memory.

The Active Cell is the current Cell for inserting information into the Worksheet. You always know the Cell Address of the Active Cell by looking at the upper left-hand corner of the Worksheet window. Three types of information can be inserted into Cells:

- Numeric Data
- Text such as a Label
- A Formula for performing calculations

The Cell Contents Display at the top of the Window shows what is in a Cell. If the Cell is a Label, it will show the actual letters making up the Text of the Label. These same letters will also be on the Worksheet itself.

MaxiPlan automatically inserts a quote mark in front of an entry with letters. Anything with letters is assumed to be a label. If you wish to treat a number as a label, you have to manually insert a quote mark in front of the number. This is especially true when you are entering a date such as '10-5-87 or '11/15/87.

If the Cell contains numbers, the numbers will appear in the Cell Contents Display as well as on the Worksheet. While a Cell with a Formula will show the Formula in the Cell Contents Display and the result of the Formula or its Value in the body of the Worksheet.

The Cursor is the site in the Cell Contents Display where the entries are made into the Cell. To transfer the entry into the actual Worksheet, you have to accept the entry by pressing the RETURN Key on the computer. We will denote the RETURN Key in this manual by <CR>.

Across the top of the Worksheet window is a series of graphic gadgets called Formula Buttons. These can be selected with the left mouse button to activate an element of a Formula such as the equals sign, a display of built-in Functions, or to actually insert numbers, decimals, and parentheses.

Creating a Worksheet

When you opened a New Worksheet, the Active Cell will be Cell A1. At this Cell, type in the characters: EXAMPLE <CR>

This should move the Active Cell down to Cell A2. If you made a mistake while typing in the word EXAMPLE, point to the Cell A1 with the Pointer; press the Select (left) mouse button. This will make A1 the Active Cell again.

To edit A1's contents, move the Pointer to the Cell Contents Display and click the Select or left mouse button. This will activate the Cursor in the Cell Contents Display. Then with either the Backspace Key or the Arrow Keys, move the Cursor in the Cell Contents Display to the error and retype the correct letters. Press the RETURN key to accept the changes.

The word EXAMPLE now appears in Cell A1.

More Labels

To fill in more labels on the Worksheet, press any appropriate combination of RETURN Keystrokes or Arrow Keys to move the Active Cell to the Cell Addresses listed below, or simply point to the Cell with the Pointer and press the Select (left) Mouse Button. At each particular Cell, key in the label indicated.

Note: the tab key will complete an entry in a Cell and move the Active Cell to the right in the same Row.

<u>Cell Address</u>	<u>Label</u>
B3	JAN <CR> , or point to C3 and click left Mouse Button
C3	FEB <CR> , or point to D3 and click left Mouse Button
D3	MAR <CR> , or point to E3 and click left Mouse Button
E3	1 ST QTR <CR>

Detail Lines: Appearance Enhancers

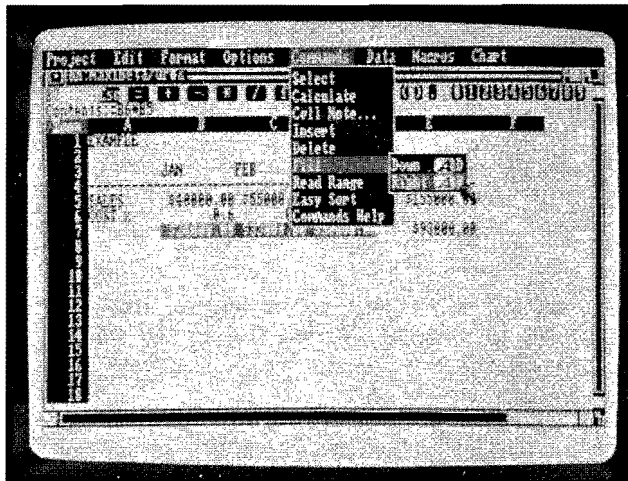
To help make the Worksheet look better, as well as clearly distinguish one type of information from another it is helpful to include detail lines. A quick way to enter such lines is by using the FILL Menu Item on the COMMANDS Menu as shown on the next page

To add Detail Lines with Fill

- Select the Cell A4 with the Pointer as the Active Cell
- Key in a series of dashes followed by a Return <CR>
- Using the Up Arrow key, move back to Cell A4
- Select the Range to Fill Right by holding the Select (left) mouse button, drag the Pointer to Cell E4. Release the button. This will highlight the Range (A4:E4).
- Pull Down the COMMANDS Menu and select the FILL Menu Item followed by the RIGHT Submenu Item.

Fill Right can also be executed by pressing the F7 key, or by the key combination right Amiga Key with the letter "R" Key.

This will cause the contents of Cell A4 to be replicated over the highlighted Range. Thus the detail line is quickly put in place.



Another method for inserting a detail line if the Range of Data does not contain a blank Cell is to highlight the Range of Cells, then select the STYLE Menu Item and UNDERLINE Sub-menu Item under the FORMAT Menu.

Numbers and Formulas

Now you will want to insert your numeric data and formulas. To continue our example:

- With the Pointer, move the Active Cell to A5. Key in: SALES <CR>
- With the Pointer, move the Active Cell to B5. Key in: 40000 <CR>

Though this is a dollar amount, you must only key in the digits for the number. The formatting, that is adding commas, decimal points, and dollar signs will be added later by MaxiPlan using the Format Menu.

- Fill in the remaining Sales figures as follows:

Cell Address	Data
C5	55000 <CR>, or point to D5 and click left Mouse Button
D5	60000 <CR>, or point to E5 and click left Mouse Button

At E5 we wish to calculate the total Sales for the three months. This can be done by using one of the built-in Functions. In this case we will use the SUM Function.

- After selecting E5, click on the "=" Formula Button

This alerts MaxiPlan to expect a Formula.

- Click on the F() Formula Button with the left Mouse Button to display the Requester listing the built-in functions

Over 70 built-in Functions are available.

- Using the Scroll Bars with the left mouse button (see the Amiga Manual), scroll down and find the SUM Function in the Requester.

- Once the SUM Function is in the Window, double click on the word SUM with the Select (left) mouse button. This will incorporate the SUM Function in the Formula in Cell E5.
- Now you want to specify the Range of Cells for summing. Move the Pointer to Cell B5, pressing the left (Select) mouse button, select the Range B5 to D5. Release the button. Press <CR> or click on the "=" Formula Button to accept the Formula.

You will see the results of the Formula, 155000, or the total of January through March Sales in Cell E5.

Formatting for Currency

The raw data we entered does not look professional. It does not have currency symbols such as dollar signs, commas and decimal points. We can add such touches by formatting the Cells.

- Starting in Cell B5, select or highlight the Range B5 to E5.
- With the right or Menu mouse button, pull down the FORMAT Menu
- Select the CURRENCY Menu Item. This will add a Dollar sign in front of each entry in the Row and two decimal points as trailers.
- Pull Down the FORMAT Menu again and select the COMMAS Menu Item with the ON Submenu Item.

Now Cell E5 has a series of ##### displayed. These indicate that the column width is too narrow to display the value in the Cell. We must widen the Column to see the value of Cell E5.

- Click on Cell E5. Pull Down the FORMAT Menu, select the WIDTH Menu Item and the SPECIFY Submenu Item.

This will bring up a Requester for entering in a new Column Width.

- Key in: 14 and click on the OK button with the left or Select mouse button.

You have just widen Column E to 14 characters wide, and you should be able to see the value in E5.

Adding More Information

Now we are ready to complete our example Worksheet, and will essentially be practicing the skills we have just acquired.

- Select Cell A6, key in: Cost % <CR>
- Select Cell B6, key in: .6 <CR>
- Point and click on Cell B6 and select or highlight the Range (B6:D6)
- Press the F7 Fill Right Function Key

This replicates the cost factor 60% in Cells B6, C6, and D6. We are now ready to calculate projected cost by creating another Formula.

- Select Cell B7 and key in: =.
- Select Cell B6, click on the "*" Formula Button and then click on Cell B5.
- Press Return to accept the Formula.

This will enter the Formula $=B6*B5$ in Cell B7.

To replicate the Formula using the Fill command:

- Point and click on Cell B7 and select the Range (B7:D7)
- Press the F7 Fill Right Function Key

This will replicate the Formula in Cell B7 into Cells C7 and D7.

Note: The Formulas' Cell references have been readjusted in Cells C7 and D7.

To finish off the Worksheet, we want to total the Cost of Sales.

- Click on Cell E5.
- Press the F3, or Copy Function Key.
- With the Pointer, move the Active Cell to E7.
- Press the F4, or Paste Function Key.

This will copy the Sum formula in Cell E5 into Cell E7. Notice the Formula Cell references have again been automatically adjusted by MaxiPlan.

Now repeat the Currency formatting steps on the Range (B7:E7).

Saving the Worksheet

Now that you have created a simple Income Statement, you will want to Save your Worksheet to a disk. Until you Save your Worksheet to a disk, it resides in the current memory of the computer. If you turn the power off to the computer at this point, you will lose all of your data and calculations.

In order to Save the Worksheet:

- Use a fresh, formatted disk. See your Amiga manual for instructions on how to create a personal data disk including how to name the disk.
- Insert the formatted, named disk in any drive.
- Pull Down the PROJECT Menu with the right (Menu) mouse button
- Select the SAVE Menu Item.

This will bring up a Requester for entering the File Name and Path for the Worksheet.

- In the **PATH** area of the File Requester, key in the name of your Data Disk, followed by a colon.
- In the **INFO** area of the File Requester, key in: **Sample Worksheet**
- Click on the **OK** button to accept the name.

This will save the Worksheet under the file name **SAMPLE WORKSHEET**, on your own named data disk. It is also possible to save a duplicate of the file under a different name with the **SAVE AS** Command Menu Item on the **PROJECT** Menu. A copy of a complete **SAMPLE WORKSHEET** also appears on the **Utilities/Data Disk** for your review.

To close the Worksheet, click on the **Close Gadget** in the upper left-hand corner of the Worksheet window. This will return you to the **CONTROL** Window. To leave **MaxiPlan**, pull down the **CONTROL** Menu and select the **QUIT** Menu Item.

What You have Learned

At this point you have learned quite a bit of information about **MaxiPlan** Worksheets. You have learned about labels, keying in numbers, formatting data, creating formulas, replicating formulas and saving your Worksheet. Finally, you have learned to close the Worksheet and exit **MaxiPlan**.

You can stop now, or if you have a few more minutes, continue on and learn how to Load your Saved File, do a What If, pull in data from other Worksheets and print the Worksheet.

Load an Existing Worksheet

If you have not closed **SAMPLE WORKSHEET**, do so now. After closing and exiting **MaxiPlan**, you can now experiment with loading or opening an existing file.

Insert the back up copy of the **Data/Utilities Disk** or your own **Data Disk** in either the **Internal Drive**, or if you have one the **External Drive**. There are two basic methods of loading an existing Worksheet File:

- Double clicking on the **ICON** for the Worksheet File
- Accessing the Name of the File from the File Requester presented with the **OPEN WORKSHEET** command

To activate the first method:

- Double click on the **Data Disk Icon**
- Double click on any **Drawer Icon**
- Double click on the **File Icon**

If the **MaxiPlan** Program disk is not any drive, you will be asked to insert the **MaxiPlan** disk. Just follow the directions for disk swapping given to you by the **Amiga** operating system.

To activate the second method:

- Double click on the MaxiPlan Program Disk Icon
- Double click on the MaxiPlan Drawer Icon
- Double click on the MaxiPlan Program Icon

Once you are in the Control Window,

- Pull down the CONTROL Menu and select the Menu Item OPEN WORKSHEET with the Menu (right) mouse button.

This will display a Requester called the MaxiPlan Name Selector. Across the bottom are Drive Buttons.

- Click on either DF0 if the Data/Utilities Disk or your Data Disk is in the Internal Drive or DF1 if it is in the External Drive.
- Click on the center of the Window to display the list of File Names. Find SAMPLE WORKSHEET. To Open this Worksheet, double Click on its name with the Select (left) mouse button.

Perform a What If?

The true power of MaxiPlan is its ability to quickly show results if any of your assumptions used to create the Worksheet are changed. Let's look at some examples of What Ifs.

What if March Sales increase to \$70,000?

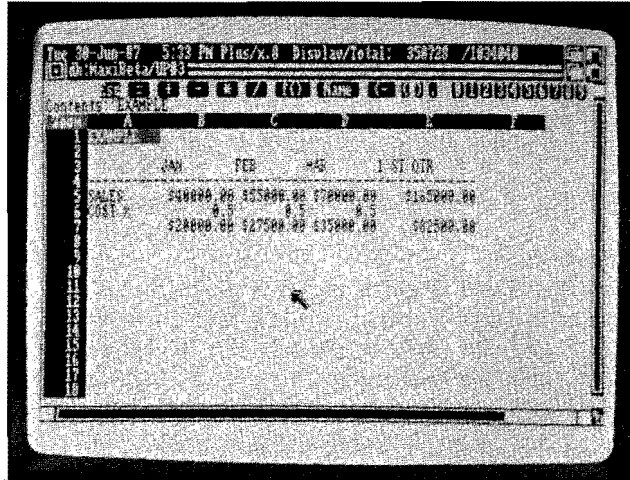
- Click on Cell D5 with the Select (left) mouse button and key in: 70000<CR>

Note that Profit at Cell E7 has been changed to \$99,000.

What if the Cost percent changes to 50%?

- Select Cell B6 and key in: .5 <CR>
- Use the left mouse button to select or highlight the Range (B6:D6).
- Press F7, the Fill Right Function Key.

Now both the Cost of Goods and Profit are altered for each Month and the entire Quarter and the Worksheet now appears as follows.



Once you have examine the results of your What If's, close the Worksheet as described above.

Linking Worksheets

Often you create Worksheets for separate subunits. MaxiPlan allows you to quickly consolidate information from several Worksheets using a special built-in function called the REFER function.

On the Data/Utilities Disk is a sample Worksheets using the REFER function. This and other example Worksheets can be on the Worksheets Drawer on this disk. For this example, you will actually create your own REFER functions that pull in data from two sample Worksheets on the Utilities/Data Disk called respectively: DIVISION 1 and DIVISION 2. We will create our REFER functions on a New Worksheet, thus first

Open a NEW WORKSHEET using the PROJECT Menu.

In order for the REFER function to work, it uses a PATH name to find the Worksheet and a Named Range for the Cell from which to pull the data. Both DIVISION 1 and DIVISION 2 have three named Cells: Balance, Expenses, and Income, we will pull data from all three Cells on each Worksheet.

Continuing our example:

- Select Cell C3
- click on the f() Formula Button
- find the REFER function in the Function Requester
- double click on the name REFER
- point to the REFER function argument in the Cell Contents Display

- key in the following including the single quote marks:

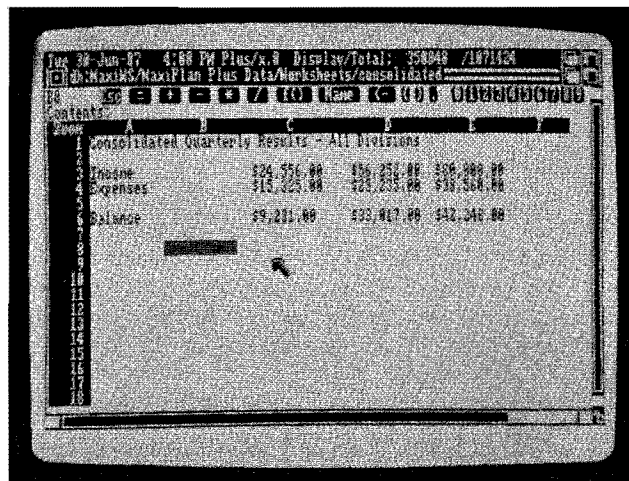
'MaxiPlan Data:Worksheets/division 1','income'

- press Return

At each of the following Cells, the REFER function is used along with the associated arguments.

Cell	Argument
D3	'MaxiPlan Data:Worksheets/division 2','income'
C4	'MaxiPlan Data:Worksheets/division 1','expense'
D4	'MaxiPlan Data:Worksheets/division 2','expense'
C6	'MaxiPlan Data:Worksheets/division 1','balance'
D6	'MaxiPlan Data:Worksheets/division 2','balance'

After keying in the appropriate labels and summing over the appropriate Ranges, the Worksheet will look as follows.



To save the Worksheet, pull down the PROJECT Menu and select the SAVE Menu Item.

Print the Worksheet

To print what you have created make certain that your printer is properly hooked up, turned on, Preferences under the Control Window properly set, and there is paper in the printer.

When printing the Worksheet, you may want to include certain information such as a title, page numbers, etc. In this example, you will specify that the date and time be printed.

1. Pull down the PROJECT Menu, and select the Menu Item PRINT SET UP with the Menu (right) mouse button.

2. Select the Submenu Item FILE NAME with the Menu (right) mouse button.
3. Pull down the PROJECT Menu. Select the Menu Item PRINT SET UP.
4. Select the Submenu Item: Date
5. Pull down the PROJECT Menu. Select the Menu Item PRINT SET UP.
6. Select the Submenu Item: Time

Now you are ready to Print the Worksheet

1. Select a single cell.
2. Pull down the PROJECT Menu. Select the Menu Item PRINT, and the Submenu Item PRINTER.

If the printer is turned on, you should now be printing a hard copy of your Worksheet.

Congratulations! You have now taken the first steps to learning how to improve your productivity with MaxiPlan.



Chapter 4

ENTERING MaxiPlan:

THE CONTROL WINDOW

Every MaxiPlan session begins and ends at the Control Window. Seven major activities concerning external controls of Worksheets can be executed in the Control Window:

- Opening existing Worksheets or a New (blank) Worksheet
- Opening or Closing the Workbench
- Deleting Worksheet Files on Disk
- Setting Available Colors at 4 or 8
- Setting the Maximum number of Rows displayed on a Worksheet Window
- Quitting or Exiting MaxiPlan and returning to the Workbench
- Redefining Printer Assignments in Preferences

Two Menus are available for executing these tasks, the Control Menu and the Printer Control Menu. To access these Menus, click on the OK Button at the bottom of the screen.

The following is a depiction of the Control Window and the Printer Control Menu

Control Menu



The CONTROL Menu dictates parameters set for all Worksheets opened during the MaxiPlan session on any drive. These parameters are saved and will dictate your activities in your next MaxiPlan session until you alter these parameters. To alter any parameter while using a MaxiPlan Worksheet, simply Save and Close the Worksheet to return to the Control Window and pull down the Control Menu. You will then be able to alter the global parameters for Worksheets. Each of the Menu Items on the Control Menu are described in turn below.

Some of the parameters can be altered from the Worksheet itself. See the section of this manual entitled "THE MaxiPlan WORKSHEET WINDOW" for a description of which parameters can be altered from within a MaxiPlan Worksheet.

New Worksheet:

This opens up a blank Worksheet. This Menu Item can also be executed by pressing the Amiga Key and the letter "N".

New Macrosheet:

Used to access a New (blank) Macrosheet.

Open Worksheet:

This Menu Item is used to access an existing Worksheet file. When selected, it displays the MaxiPlan File Requester, which lists MaxiPlan Drawers and Files.

Across the bottom of the Requester are buttons for selecting the appropriate disk drive. These buttons are important in case you wish to open up a file which is on a disk in a different drive than the one being used for the MaxiPlan Program Disk.

MaxiPlan will always default to the disk drive where the Program Disk is inserted. To select a different disk drive, click on the Disk Drive button with the Select (left) mouse button. The new disk drive name will appear in the PATH prompt. Then you should click in the middle of the Requester Window to see the Files on the disk in the new drive.

Once the list of files is presented, a Scroll Bar is available to see additional names. Drawer names and File names are displayed in different colors. To see the contents of a Drawer, double click on its name or click on the name once with the Select (left) Mouse button and then click on the OK button to open the Drawer. You use the same action to open a File in the Drawer. If you want to return to the previous level of the directories, click on the phrase Previous Directory at the top of the Window.

The Open Worksheet can also be executed by pressing the right Amiga Key and the letter "O".

If you know the Pathname and File Name you wish to open, you can enter the Pathname in the PATH prompt at the bottom of the Requester Window and the File Name in the INFO prompt to speed up the process of opening up a Worksheet file.

Delete File:

You may wish to use this command to either free up disk space, or to remove a file you no longer need. Accessing this Menu Item displays the same MaxiPlan File Requester that appears when opening a file. You must first select the drive, and then click on the center of the window to find the name of the file to be deleted. After double clicking on a File Name, MaxiPlan presents a Requester asking you to again affirm this is the file you wish to delete. Click on Yes to affirm, and No to cancel the deletion process.

Color Selection:

MaxiPlan operates under one of two possible color schemes: Standard Mode or 4 colors and Enhanced Mode or 8 colors. The Color Selection Menu Item has an associated Submenu for selecting either 4 colors or 8 colors. Under 4 colors, MaxiPlan will use less memory and therefore you can save a larger Worksheet. Using 8 colors uses additional memory, but broadens the possible application of color for graphic presentation of Worksheet analysis.

Maximum Window Size:

Under the Normal Mode for viewing the Worksheet, it is possible to display the Worksheet with either 19 rows or 44 rows in the Worksheet window. The Maximum Window Size Menu Item has a Submenu for selecting either 19 rows or 44 rows. While a larger Window size allows you to see more data, it also uses more memory.

About MaxiPlan:

This is a window listing the program copyrights. Intuitive Technologies holds the copy right to the program code for both MaxiPlan 500 and MaxiPlan Plus. Credit is also given to Michael G. Lehman and Scott D. Saunders, the programmers responsible for the creation of MaxiPlan 500 and MaxiPlan Plus.

Open Workbench:

This Menu Item opens the Workbench Window without having to Exit MaxiPlan. Access to the Workbench allows you to open up other programs on the Workbench and makes available system utilities such as Initializing Disks.

Close Workbench:

This Menu Item closes the Workbench Window without having to Exit MaxiPlan.

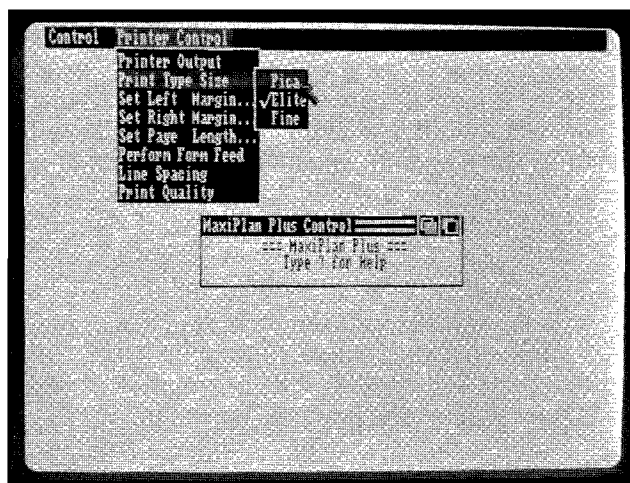
Automatic Macros (Only in MaxiPlan Plus):

This Menu Item has two Submenu Items for toggling On or Off this capability. When Automatic Macros is On, when a Macrosheet with a Macro named "Automatic" is opened, that Macro will immediately be executed.

Quit:

This is the Menu Item that must be selected to Exit MaxiPlan. Before you can access Quit, all open Worksheets must be closed. To completely exit the MaxiPlan program, you must select the Quit Menu Item in the Control Menu. This command can also be executed by pressing the Amiga Key and the letter "Z".

Printer Control Menu



The above is an illustration of the second Menu on the Control Window used to access Printer Preferences without having to leave MaxiPlan. The Preferences on this menu do include the most commonly used printer options such as setting margins, type size or output quality. Each of the available Menu Items is discussed in turn below.

Printer Output:

Two Submenu Items are available for distinguishing between Black & White and Color Printers.

Print Type Size:

Three Submenu Items are available to establish the type size. The options available include: Pica, Elite, and Fine.

Set Left Margin:

When this Menu Item is selected, a Requester appears for keying in the left margin setting. It is expressed as number of characters from the left. The actual width of the margin will thus depend on the Print Type Size and the Margin Setting. For example: a 10 character margin setting in Pica will result in an inch wide margin. If Elite Type is selected, a Margin Setting of 10 will result in a margin of 5/6ths of an inch since it is a smaller type face. To get an inch left margin in Elite, the margin setting must 12 characters.

Set Right Margin:

The Right Margin is set in a Requester just as described above for the left margin. It is expressed as number of characters from the left of the page. Thus to calculate the right margin setting, you must know the width of the paper, convert it to number of characters and subtract the width of the right margin expressed in number of characters to arrive at the right margin setting.

Set Page Length:

This Menu Item brings up a Requester for keying in the page length. The page length is determined by the size of the paper used for printout. It is expressed as number of lines. Depending on the line spacing specified, the same number of lines will translate into a different page length. For example: If Line Spacing is set a 6 lines per inch, to get a page length of 11 inches, you should enter a page length of 66, while if 8 lines per inch are used, the page length should be 88 lines.

Perform Form Feed:

To initiate a Form Feed at the end of Worksheet during printing, you access this Menu Item.

Line Spacing:

This Menu Item is used to toggle between the two Submenu Items for line spacing: 6 lines per inch and 8 lines per inch.

Print Quality:

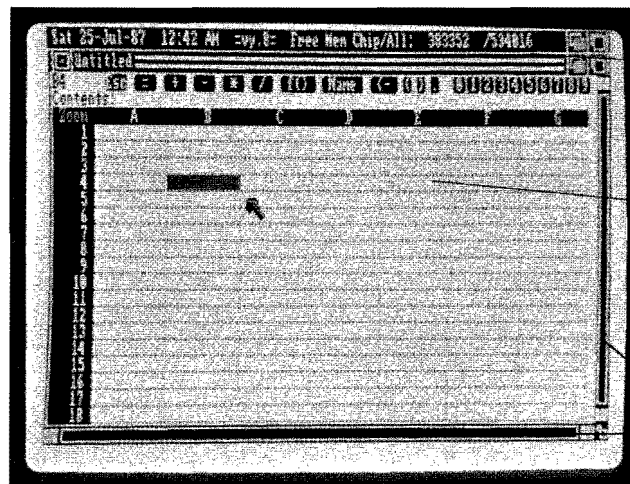
Two Submenu Items are available to determine the quality of print output: Draft and Letter.

If you wish to change the Printer Preferences settings at anytime during a MaxiPlan session, you can go back to this Menu without having to access the Workbench.

Chapter 5

WORKSHEET WINDOW

The layout of the Worksheet Window is depicted below. It will be helpful to familiarize yourself with the layout and to learn the purpose of each element of the screen. When you load the MaxiPlan program, you first encountered the Control Window. This is the point of entry and exit from MaxiPlan. This window is explained in further depth in the chapter entitled "ENTERING MaxiPlan: THE CONTROL WINDOW". To view a blank Worksheet, pull down the Control Menu and select the New Worksheet Menu Item. You will then be presented with a blank Worksheet as shown below.



Worksheet Info, etc.

Cells formed by
Rows and Columns

Scroll Bars

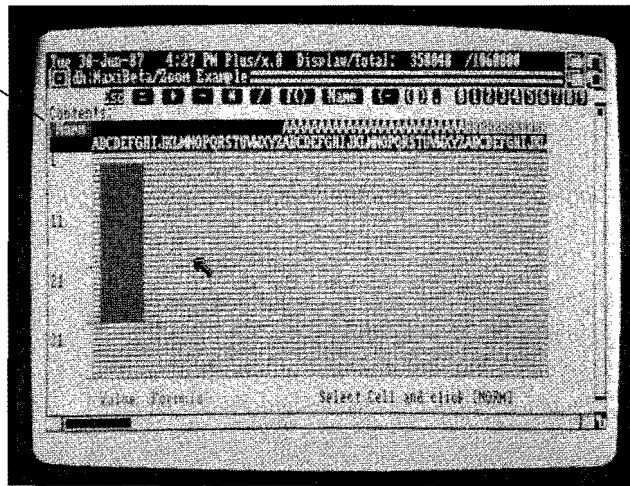
The MaxiPlan Worksheet is divided into three broad areas:

- **Worksheet Info, Gadgets for Switching Windows and Closing a Window, Formula Buttons, Active File Name, and Cell Contents Display at the upper portion of the screen**
- **The body of Cells formed by Rows and Columns in the center of the screen**
- **A Vertical Scroll Bar and a Horizontal Scroll Bar at the bottom and right side of the screen.**

Norm vs Zoom Modes

When a Worksheet is opened, it appears in the NORM Mode. The NORM Mode displays 7 Columns and 19 Rows. It is also possible to display your Worksheet in ZOOM Mode, or from a bird's eye view to get the big picture in which you can see more Cells at once. In the ZOOM Mode MaxiPlan displays 64 Columns and 40 Rows. However, you can not see the entries in the Cells since each Cell is very small. The contents of a particular Cell can be seen by selecting the Cell and viewing the Cell's contents in the Cell Contents Display at the top of the window. To see the "Zoom" mode, click on the word Zoom in the upper left corner of the Worksheet with the Select (left) mouse button.

Select to
Return to
Norm Mode

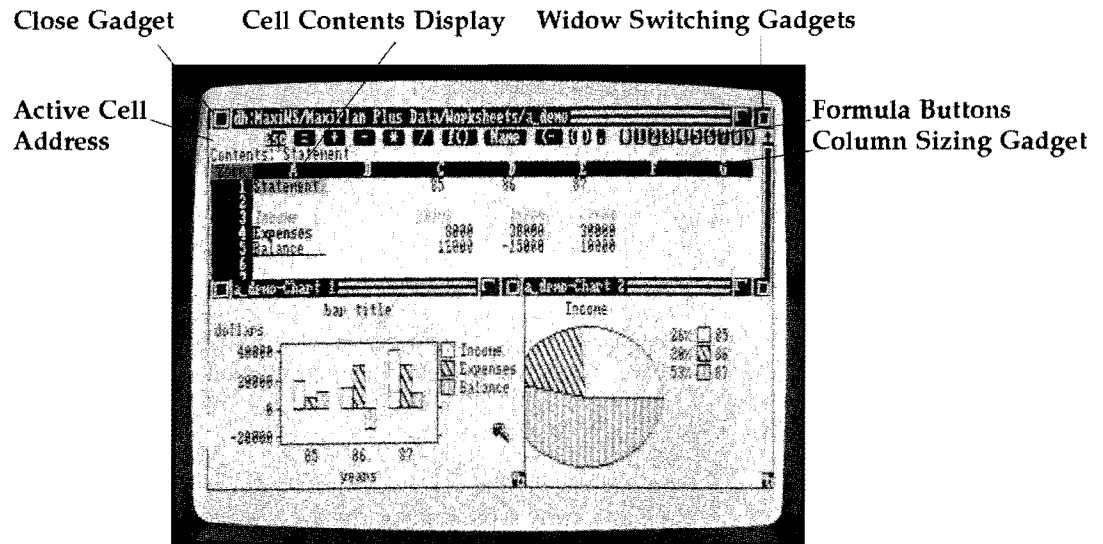


Above is a depiction of the Worksheet in Zoom mode. Note that the Worksheet window in Zoom mode is different from that of the Norm mode. The actual entries in the Cells are not displayed, and the classification of the Cells in the defined Worksheet is color coded for a quick visual representation of the layout of the Worksheet.

Worksheet Info

Across the top of the Worksheet is displayed information concerning the Worksheet. The current day of the week, date and time from the Amiga System Clock are displayed. To the right is the Version of MaxiPlan you are using, and a Memory Meter stating the amount of display memory as well as the amount memory available on the Amiga.

Below is a Close up of the top of the Worksheet. Each part of the Worksheet illustrated is discussed.



Window Switching Gadgets

In the upper right hand corner of the window are located the Window Switching Gadgets for changing the display order of the open Windows. Clicking on the left Gadget, or Front Gadget, moves that particular Window to the Front of the display. The right Gadget, or Back Gadget, is used to move a Window to the back of the display. See your Amiga manual for more details.

Close Gadget

In the extreme upper left hand corner of the MaxiPlan Window is the Close Gadget. Clicking on this Gadget closes the Window.

Active File Name

Next to the Close Gadget is the Active File Name. This includes the File Pathname and the File Name for the MaxiPlan Worksheet. The Pathname will include either the Disk Drive or Disk Name, separated by a colon from a Drawer or Directory for the Worksheet if one is used. It is the location where MaxiPlan looks to find the Open Worksheet File. Finally, the Active File Name itself will be separated from the Drawer or Directory name by a forward slash.

Thus the Active File Name may take any of the following forms:

- DF0:Directory/File Name
- Disk Name:Directory/File Name

- DF0:File Name
- Disk Name:File Name

Active Cell Address

Below the File Name is the Cell Address of the Active Cell. A Cell Address is comprised of a Letter or Letters to designate the Column followed by a Row number. Rows and Columns will be explained in greater depth below. The Active Cell is where MaxiPlan is currently entering data, text, or a formula.

Formula Buttons

To the right of the Active Cell Address is a series of Buttons. These Buttons are used for entering Formulas into a Cell via the mouse. Formulas will be discussed at length in the chapter entitled "Creating Formulas". To use one of the Formula Buttons, simply click on the Button with the Select (left) mouse button. From left to right the Formula Buttons are:

Escape Button: ESC

Same as the Escape Key on the Keyboard. This erases the contents in a Cell, stops an action such as printing, or stops the execution of a Macro.

5 Buttons for arithmetic operators: = + - * /

Clicking on an arithmetic operator button incorporates the operator into the Formula.

Function Selection Window Button: F()

Clicking on this button causes the display of a Requester listing all of the built-in Functions. The Function Selection Requester has a Scroll Bar for fast access to any Function.

Name Selection Window Button: Name

Clicking on this button results in the display of a Requester listing all of the Named Ranges for the Worksheet. A Scroll Bar is available in the Name Selection Requester.

Destructive Backspace Button: <-

This functions the same as the Backspace Key on the Keyboard. Clicking on this button moves the Cursor backwards and destroys the entry in the Cell Contents Display for the Active Cell character by character.

Open Parenthesis and Closed Parenthesis Buttons: ()

Clicking on the next two buttons inserts parenthesis into a Formula or Cell.

Decimal Button:

Clicking on this button incorporates a decimal into a Formula or Cell.

Digit Buttons: 0 1 2 3 4 5 6 7 8 9

Clicking on each of the ten digit buttons places that digit into a Formula or as data in a Cell.

Cell Contents Display

Underneath the Formula buttons is an area which displays the contents of the Active Cell. If the Active Cell contains a Formula, the Formula will be displayed in the Cell Contents Display, while its result or Value is shown in the Active Cell itself. Cells which merely contain data will show that data in both the Cell Contents Display as well as the Active Cell on the Worksheet. However, the Cell Contents Display will also include a designation for Format alignment of the Data. Similarly, Cells containing Text or Labels will show the Text both in the Active Cell and the Cell Contents Display. However, if a text string is inserted in the Cell, it will be preceded by an apostrophe. Thus any time you wish to treat a string of numbers or a formula as text, you can edit the Cell Contents Display and insert an apostrophe to ensure that the formula or numeric data is displayed instead of used in a calculation.

Worksheet Cells

The center portion of the screen is taken up by the actual Cells of the Worksheet. Every Cell is formed by the intersection of a Column and a Row. A Column is a vertical collection of Cells, while a Row is a horizontal collection. Columns are designated by Letters. The Letter for each Column is shown above the Column. Rows are designated by Numbers which are located to the left of each Row.

Scroll Bars

Along the right side of the Window is the Vertical Scroll Bar. At either end of the Scroll Bar are the Scroll Arrows. Each Arrow is used to move the displayed Cells up or down one Row at a click on the Arrow. The direction of the Arrow indicates whether the Rows are moving Up or Down.

To automate the process, click on the Scroll Box with the Select Mouse Button (left button) and move the Scroll Box in the appropriate direction. The relative size of the Scroll Box to the Scroll Bar equates to the ratio of number of Rows displayed to the number of Rows in the Worksheet. Thus a Worksheet that only has 19 Rows will have a Scroll Box equal to the entire Scroll Bar. While a Worksheet with 36 Rows will have a Scroll Box half the size of the Scroll Bar.

MaxiPlan allows you to easily move about within the Rows or Columns which have been defined in the Worksheet. The area accessed by the Scroll Bars is defined to be the defined portion of the Worksheet plus an extra half screen in each direction. Empty Rows and

Columns beyond these boundaries can only be accessed with the down and right Scroll Arrow, the Zoom mode or the Select Cell Location command.

At the bottom of the Window is the Horizontal Scroll Bar which treats the display of the Columns of the Worksheet in the same manner that the Vertical Scroll Bar effects the display of the Rows of the Worksheet.

Sizing Gadget

On the very bottom right of the Window is the Sizing Gadget. This Gadget can shrink or expand the size of the Window displaying the Worksheet. Making the top Worksheet smaller allows you to see other Open Worksheets under the top Worksheet.

Column Sizing Gadgets

Between each of the Column Letters at the top of the Worksheet Window is a fine line designating the border between Columns. If you wish to change the Column Width for any particular Column, you can do so by pointing on any of the Column Sizing Gadgets and relocating the border to another location.

For more information about working with Amiga Windows, see your Amiga manual.

Chapter 6

WHERE TO GET HELP

MaxiPlan was designed to be as self-evident as possible. However, when you need help there are several sources available:

- On-Line Help Menus
- On-Line HowTo Files
- On-Line Manual Update Files
- Tutorial and Reference Guide
- Oxxi Technical Support

Each help source is free to registered owners of MaxiPlan 500 and MaxiPlan Plus. Call in Tech Support is intended to not only help with technical problems, but to also get feedback on desirable improvements and new applications for MaxiPlan. Don't hesitate to call for assistance, or to suggest a feature you would like implemented in later versions of MaxiPlan.

On-Line Help Menus

Associated with each Menu is a Help Menu Item. To find out more about a particular Menu, click on the Help Menu Item. A Requester Window will appear at the bottom of the screen displaying Help Text. Each Menu Item will be listed along with a brief explanation of its application. The Requester typically displays up to 10 lines of Help Text at a time. To see more Help Text, either use the Scroll Bar in the Requester Help Text Window or move the Help Text Window higher up on the screen and expand the size of the window with the sizing gadget.

On-Line HowTo Files

On the MaxiPlan Program Disk and the MaxiPlan Utilities /Data Disk are displayed two Drawers which list information about MaxiPlan: Manual Update Drawer and HowTo Drawer. These Drawers may or may not appear on either Disk. They will be there if new features or important information about MaxiPlan has been developed since the printing of the Manual distributed with the disk. These Files are our way of giving you immediate updating information to our current inventory of Manuals.

If the Manual Update Drawer is used, it will either contain additional information or errata information to the Manual.

If the HowTo Drawer is used, it will have a brief explanation of MaxiPlan activities which cause the most support calls and that may require further elaboration than is given in the Manual.

Currently the HowTo Drawer has the files:

- Setup_A_Database
- Search_A_Database
- Sort_A_Database

It is possible that additional or different files may have been added subsequent to the printing of this manual.

Open the HowTo File Drawer to see the latest files by Selecting the HowTo File Drawer Icon. Each file will be designated by an Icon. Double click on one of the file Icons to read the contents of the file.

On-Line Manual Update Files

Another On Line supplement to the Tutorial and Reference Guide is the Manual Update Drawer. Similar to the HowTo Drawer, it contains files with updating information about MaxiPlan.

To read any file in the Manual Update Drawer, simply double click on its Icon.

Tutorial and Reference Guide Manual

The Tutorial section of this manual is intended to offer instructions on how to use MaxiPlan along with associated examples. Related topics are grouped such as usage of formulas and functions, editing actions, etc. Every user of the Tutorial and Reference Guide and MaxiPlan should begin with section of the manual entitled "INTRODUCTION". This outlines MaxiPlan's conventions. To learn more about the Worksheet gadgets, everyone should next turn to the sections of the manual sections devoted to describing the Control Window and the Worksheet Window entitled respectively "ENTERING MaxiPlan: THE CONTROL WINDOW" and "THE WORKSHEET WINDOW".

For the experienced spreadsheet user a capsule summary of typically MaxiPlan activities can be found in Chapter 19 of the manual entitled "LESSON TWELVE: ADVANCED SAMPLE WORKSHEET". It offers the flavor of the program but is not intended to substitute for the remainder of the Tutorial.

Less experienced spreadsheet users should begin with "WORKSHEET BASICS", this gives some background to the analytical applications of spreadsheets. They should then turn to the core of the Tutorial, the first eleven Lessons to learn the details of MaxiPlan's capabilities. After learning the basics, they will be ready to attempt to duplicate the actions in "LESSON TWELVE: ADVANCED SAMPLE WORKSHEET".

In the Reference Guide section of the manual is divided between two Chapters, the MaxiPlan COMMAND GLOSSARY offers detailed specifics of each command and examples. The FUNCTION REFERENCE is a glossary of the MaxiPlan Built-in Functions. Each function description includes an example of an application using the function.

Oxxi Technical Support

Technical Support accepts calls between the hours of 10 am and 4 pm, Pacific Time at (213) 427-1227. To take full advantage of Technical Support it is best to carefully document the problem before calling. Often solving a technical problem involves eliminating sources of errors. The more the problem is defined, the faster Technical Support will be able to arrive at a solution.

When calling Technical Support you should be prepared with the following information:

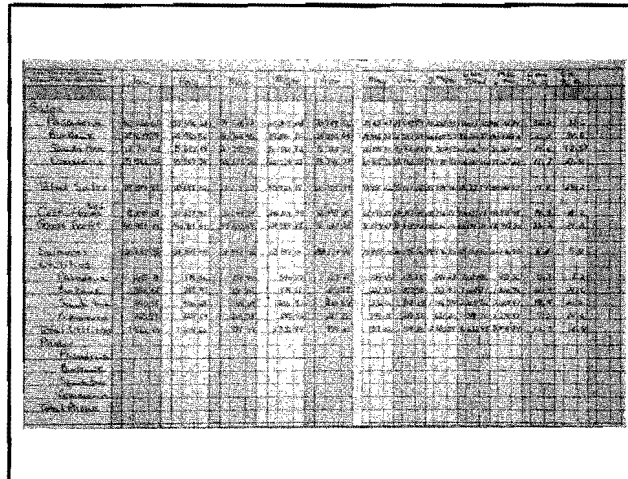
- **Name of Product**
- **Version Number**
- **Serial Number**
- **Operating System and Version**
- **Method to Duplicate the Problem**

Remember when having a problem, you may have inadvertently used the wrong command or deviated from a MaxiPlan convention. It is best to first back out of a situation by pressing the Escape Key if possible, then try to recreate the error and document what occurs when. If you are able to reproduce the problem, then call Technical Support with your clearly defined problem.

Chapter 7

WORKSHEET BASICS

Spreadsheet computer software programs derive their name from the old fashioned manually generated ledgers accountants created on wide pads of paper. Typically these ledgers organized numeric data into Rows and Columns with totals in each Row as well as each Column. An example of a simple ledger is shown below.



Similarly, computer spreadsheet programs organize data into Rows and Columns. In MaxiPlan, the Columns are designated by letters while the Rows are designated by numbers. The intersection of a Row and Column is a Cell.

Cells are the basic building blocks of a MaxiPlan Worksheet. A particular Cell is denoted by its Cell Address, which is the combination of the letter of the Column and the number of the Row that the Cell occupies. The Cell depicted below has the Cell Address: A1.

The basic method spreadsheets use to analyze data is to:

- format and input data
- create Formulas to perform calculations
- output the results

Each step is discussed in turn below.

Cell Address

Row Numbers

Column Letters

The screenshot shows a spreadsheet application window. At the top, a status bar displays 'Tue 30-Jan-87 2:35 PM Plus/x.8 Display/Total: 350000 /1000000'. Below this is a menu bar with options like 'File', 'Edit', 'Format', 'Data', 'Tools', 'Window', and 'Help'. The main area is a grid of cells. The columns are labeled with letters A through F, and the rows are labeled with numbers 1 through 18. The data in the grid is as follows:

	Jan	Feb	Mar	Apr	May
Jan	1000	1500	2000	2500	3000
Feb	500	600	700	800	900
Mar	500	600	700	800	900
Apr	500	600	700	800	900
May	500	600	700	800	900
Profit w/Flat Cost	500	1000	1500	2000	2500
Profit w/Rate Cost	500	750	1000	1250	1500

Formatting the Worksheet

The data organized on Worksheets is entered into the Cells. Each Cell is formatted to accommodate the type data entered into it. For example, if it is currency the data can be displayed with a dollar sign and cents. For other types of data it may be appropriate to only show whole numbers, or to express the data as a percent.

It is also possible to vary the width of the Cell. Since the Cells are in Columns, the width of the entire Column of numbers is usually determined by the Cell with the greatest number of digits required. Typically, if the Column is not wide enough for a particular Cell, MaxiPlan will display ##### in the Cell. When the width of the Column is sufficiently wide, the ##### disappear and are replaced by the value in the Cell.

Another formatting variable is adding or deleting Rows and Columns. Inserting a blank Row to separate one type of data from another may help organize the layout of the Worksheet. While removing an unnecessary Row or Column may neat up the appearance of a Worksheet.

Performing Calculations

Most analysis conducted with a spreadsheet program is on numeric data. The analysis of numeric data involves performing calculations on the numeric data entered in the Cells. MaxiPlan uses Formulas to conduct the calculations.

MaxiPlan Formulas are statements of equivalence like regular mathematical formulas. One side of the equal sign is called the formula while the other side is called the value. Values in common terms are known as "the answer to the formula".

When creating a MaxiPlan formula, the statement to define the formula begins with an equal sign. This alerts MaxiPlan to perform some sort of calculation.

Formulas are entered into Cells, just as data such as numbers and text are entered. Like regular formulas, MaxiPlan uses variables, constants, and operators. Constants are fixed values keyed into the formula. The variables of a MaxiPlan formula are typically either another Cell or a grouping of Cells known as a Range. When a formula uses another Cell, it refers to that Cell by its Cell Address or its Name.

When actually performing the calculation, MaxiPlan takes the contents of the Cell referred to and either adds it to something, multiplies it by something, or whatever action is dictated by the operators of the Formula.

MaxiPlan has two types of operators: arithmetic and logical. These are explained at greater length in the section of the manual entitled "CREATING FORMULAS". The arithmetic operators available are denoted by the following symbols:

Operator	Action
+	Add
-	Subtract
*	Multiply
/	Divide
^	Exponential
=	Equivalence

For example, when MaxiPlan inserts a plus sign between two Cell Addresses, it will add the Cell Contents of one Cell to the Cell Contents of the other Cell. If the contents of the Cells were simply numbers, then the numbers would be added. However, if the contents of the Cells were Formulas, then the Formulas as well as their values would be added.

The following is an example of how arithmetic operators are used.

Cell	Contents	Value
B3	500	500
B4	700	700
B5	=B3*2	1000
B6	=B4+100	800

Then:

Cell	Formula	Value
C3	=B3+B4	1200
C4	=B5+B6	1800

Logical operators create logical statements which solve for a true or false condition. They are used to choose between two alternative courses of action. To choose between more than two actions, you must create a series of logical statements. Logical operators include:

Operator	Action
>	Greater than
<	Less than
=	Equal to
>=	Greater than and equal to
<=	Less than and equal to
<>	Not equal to

Using the same sample data above. An example of use of Logical Operators is given below.

	Formula	Value
D3	=B3 > B4	0 = False
D4	=B4 < B5	1 = True
D5	=B6 = B5	0 = False

Using Built-In Functions

MaxiPlan has a series of pre-defined mini Formulas called Functions. A Function can be used either alone as a Formula or it can be incorporated as part of a more complex Formula.

Functions are comprised of two parts:

- Function Name
- Function Argument

The Name identifies the function while the Argument is the data upon which the function acts.

Arguments vary by the type of function. Some require a Range of Cells, some an interest factor, and some require no argument at all.

A commonly used built-in Function is the SUM Function. The SUM Function adds up the items in its argument. These items may be actual numbers, or the Argument may be a Range of Cells containing Numeric Data. Thus to add up the cells in the Range B3 to B6 with the SUM Function we would use the following formula:

=SUM(B3:B6)

You will note the convention for defining a Range is to separate the beginning Cell from the ending Cell with a colon. Using the same definitions for Cells B3,B4,B5 and B6 the value of the above Formula using the SUM function is: 3000.

Presenting the Results of the Analysis

Once all of the data has been entered into properly formatted Cells and the calculations defined by Formulas, you may want to display the results either on the screen, print them as hard copy, or output them as a Disk File. It is also possible to convert the data into a Chart such as a Bar graph, that are output either to the screen, Disk File, or printed as hard copy. MaxiPlan Charts can be dynamically linked to your data so you can see the immediate effects of changes in data or Formulas on the Charts. Each scenario can be printed for later comparison. Finally, Charts can be exported to paint programs as an IFF File for further graphic enhancement. Chapter 13 "LESSON SIX: PRINTING AND DISK FILE OUTPUT" and Chapter 16, "LESSON NINE: CHARTS: VISUAL DISPLAY OF DATA" of this manual go into greater depth on these topics.

Chapter 8

LESSON ONE:

OPENING, SAVING, CLOSING AND DELETING WORKSHEETS

Before beginning any MaxiPlan session you must enter MaxiPlan and then open a Worksheet File. Once you have either edited an existing Worksheet or created a new Worksheet you will want to save your work for later retrieval. Finally, before exiting MaxiPlan all open Worksheets must be closed.

In this Lesson you will learn:

- How to Enter MaxiPlan
- How to Open an existing Worksheet
- How to Open a New Worksheet
- How to Save a Worksheet
- How to Save a Duplicate Worksheet
- How to Delete a Worksheet
- How to Close a Worksheet
- How to Exit MaxiPlan

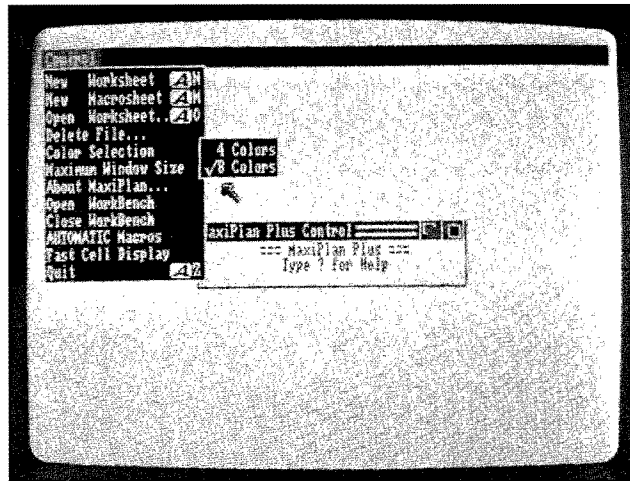
Entering MaxiPlan

MaxiPlan is a bootable disk, that is it comes with the latest version of Kickstart installed and Workbench. After turning on the machine, insert the Program Disk into any drive. The MaxiPlan program disk will boot up and you will be presented with an Icon of the Program Disk on the Workbench window.

To enter MaxiPlan you must:

Select the Program Disk by clicking on the Icon with the Select (left) mouse button. This will then display the Control window shown on the next page.

In the Control Window is the Control Menu which will allow you to either open an existing MaxiPlan Worksheet or bring up a new MaxiPlan Worksheet.



Open an Existing Worksheet

Once you are in the Control Window you can perform many tasks. For a full explanation of the Control Window, see the Chapter entitled "ENTERING MaxiPlan: THE CONTROL WINDOW".

To work with an existing Worksheet,

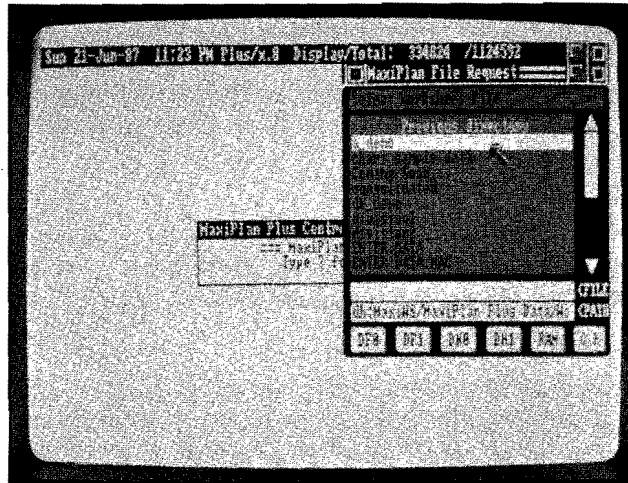
- pull down the CONTROL Menu with the Menu (right) mouse button
- select the OPEN WORKSHEET Menu Item with the Menu (right) mouse button.

You will then be presented with the MaxiPlan File Requester which can list the Directories (or Drawers) and associated Worksheet Files currently residing on the disks in any Amiga drive.

Before opening a Worksheet File, you must first locate the File. To locate a File you must access the proper Drive where the disk containing the File is inserted. A series of Drive Buttons are available across the bottom of the screen designating each of the possible drives. Respectively they are:

- DF0:** the internal drive
- DF1:** an external drive, or second internal drive on the Amiga 2000
- DF2:** a second external drive
- DH0:** a hard disk
- RAM:** a RAM disk

Every Amiga will be configured differently. Some will only have one internal drive, others will have an internal drive and a hard disk, while others will have both an internal and external drive and will also be using a RAM disk. Accessing a non-existent drive for a particular machine will only result in an error message.



To select a particular Drive, click on the drive button with the Select (left) mouse button.

After you have selected a Drive, to see the directories and files on that drive, again with the Select (left) mouse button click on the center of the MaxiPlan File Requester. A list of Directories and Files is then presented. Directories and Files are distinguished by color.

To see the Files in a Directory (or Drawer) double click on the Directory Name with the Select (left) mouse button. This will then display the list of Files in that particular Directory. To get back to the previous level, click on the phrase "Previous Directory".

Once you have found the desired Worksheet File, to open the File you again use the double click technique with the Select (left) mouse button.

It is possible to open up to three Worksheets simultaneously. To open another Worksheet, you use the PROJECT Menu of the Worksheet window and the OPEN WORKSHEET Menu item in the same manner as the described above.

The OPEN WORKSHEET command can also be accessed by depressing the right Amiga Key with the letter O.

Create a New Worksheet

When you need a blank Worksheet window for creating a new Worksheet, you will use the NEW WORKSHEET Menu Item. This Menu Item is available both on the CONTROL Menu of the Control window and the PROJECT Menu of the Worksheet window.

The steps to create a New Worksheet are:

- pull down the CONTROL Menu with the Menu (right) mouse button
- select the NEW WORKSHEET Menu Item with the Menu (right) mouse button.

This will immediately bring up a blank Worksheet for inserting data, labels, and formulas.

Just as another existing Worksheet can be opened from within any MaxiPlan Worksheet, it is possible to open another blank or New Worksheet. The PROJECT Menu lists the NEW WORKSHEET Menu Item which can be accessed to bring up a fresh blank Worksheet. In addition, the NEW WORKSHEET command is available by depressing the right Amiga Key with the letter N.

Save the Worksheet

As you are keying data and formulas, you will want to preserve your entries by periodically saving the file to a Data Disk. The SAVE Menu Item on the PROJECT Menu will accomplish this task.

It is always best to save your Worksheet Files to an initialized Data Disk, rather than to the back up copies of either the MaxiPlan Program Disk or the Utilities/Data Disk. Both of these disks come to you nearly full, and thus there is very little room to save additional Worksheets. Instead you should save your Worksheet Files to your own Data Disk.

Many times it is appropriate to keep related Files on the same Disk. Thus you may have one Disk for your tax files, another for your databases, and still another for your sales projections. This is obviously a highly individual decision as to how you organize your Files. Our only real comment is that you will be able to save larger Worksheets if you do not attempt to save them to either the MaxiPlan Program Disk or the Utilities/Data Disk.

To Save a Worksheet for the first time:

- insert your Data Disk in a Drive
- pull down the PROJECT Menu with the Menu (right) mouse key
- select the SAVE Menu Item with the Menu (right) mouse button

You will be presented with a MaxiPlan File Requester where you will key in the name you have chosen for the File, as well as the Pathname for the Data Disk. It is best to choose a File Name which quickly identifies the contents of the Worksheet, as well as a File Name not currently used on the Data Disk. If you attempt to use a duplicate name, it will over write the previous File and you may inadvertently loose import data. File Names that also incorporate imbedded blanks may require the usage of quotation marks later for accessing the file. Thus it is sometimes more convenient to either avoid blanks or to use an underline to designate a blank.

You must also specify the PATH for the File. MaxiPlan will automatically insert the PATH where the you started, typically where the MaxiPlan Program Disk resides. However, you have the option to specify your preferred PATH.

Unless you indicate differently, the File will be saved to the disk in the active drive. The active drive name or the name of the disk in the active drive should be visible in the PATH display at the bottom of the Requester.

If you wish to save it to a different drive or disk, you can either key in the drive name or disk name, or click on the appropriate Drive Button with the Select (left) mouse button. The new

drive name or disk name will then be in the PATH display at the bottom of the screen. Now the file will be saved to the disk in the designated drive. Note the Drive or Disk Name must be followed by a colon.

You can also save the File to a designate Directory or Drawer. If one is used, the name of the Directory or Drawer must also be in the Pathname. A Directory or Drawer should be created on the Workbench prior to attempting to save the file. See your Amiga manual for instructions on how to create directories.

If a Directory or Drawer is used, its name follows the colon (:) after the Drive or Disk Name. Thus a Pathname will take either of the following example forms:

- DF0:
- DF0:Drawer_Name
- Disk Name:
- Disk_Name:Drawer Name

After you have decided the PATH, you should key in the File name. The actual File Name should be keyed in the FILE display above the PATH display. The considerations for naming a file are outline above. Once you are satisfied with the File Name and the Pathname, to accept your entries, click on the OK Button next to the Drive Buttons with the Select (left) mouse button.

Your File Name will be added to the list of other MaxiPlan files on the Data Disk, and will be displayed in the MaxiPlan File Requester for that Disk the next time it is accessed. See Introduction to Amiga for more details about directories and Pathnames.

To save revisions to your Worksheet File:

- access the SAVE command on the PROJECT Menu as described above

A Message will be presented asking if you wish to save the Worksheet changes.

- click on the Yes Button to save the Worksheet changes

As the file is being saved, a brief message is flashed on the screen stating MaxiPlan is saving the file. Typically it takes so little time to save a file, that this message is flashed up on the screen faster than you can read it. As it is being saved, the light on the disk drive indicating the disk in the drive is being accessed will be lit. After the save process to the disk is complete, you will be returned to the Worksheet for more data entry.

SAVE is also available by depressing the right Amiga Key with the letter S, and the F1 function key with the shift key.

Create Duplicate Worksheets

It is sometimes handy to have a duplicate of a Worksheet so one copy can be further manipulated while another remains fixed. To create a duplicate Worksheet you will want to

save it to the disk under a different name. This is accomplished with the SAVE AS command.

The SAVE AS command is available on the PROJECT Menu. When invoked, you will be presented with the MaxiPlan File Requester and will have to go through the same steps described above for the initial save of a Worksheet File. That is you will have to designate a Pathname as well as a File Name.

To SAVE AS a new name

- insert the appropriate Data Disk in any Drive
- pull down the PROJECT Menu with the Menu (right) mouse button
- select the SAVE AS Menu Item with the Menu (right) mouse button

You can then specify a different PATH if you wish and the new name for the Worksheet. Again, it is important to remember not to use a file name already on the Data Disk. After you have keyed in the PATH and the File Name, click on the OK Button. You will now have a duplicate Worksheet for manipulating or editing. It is also a good idea to create a duplicate Worksheet before such activities as:

- Printing to a Disk File
- Saving a Database as Text

Either of these activities could conceivably turn your MaxiPlan File into a format that can no longer be loaded into MaxiPlan. Without a back up duplicate of the MaxiPlan File, you will have to recreate the File manually.

Delete a Worksheet

To delete a previously saved Worksheet, you must access the MaxiPlan File Requester with the DELETE FILE command. This command is available on both the CONTROL Menu and the PROJECT Menu. From either Menu, the DELETE FILE command operates in the same fashion.

To delete a file from within a Worksheet

- insert the Data Disk with the File to be deleted in any Drive
- pull down the PROJECT Menu with the Menu (right) mouse button
- select the DELETE FILE Menu Item with the Menu (right) mouse button

This will display the MaxiPlan File Requester. At the top of the Requester is the message: "Select File to Delete". You must first find the File by selecting the Drive where the File resides and clicking on its Directory, just as you do when opening a Worksheet.

Once you have found the File Name to be deleted,

- double click on the File Name with the Select (left) mouse button

MaxiPlan will display a Requester for you to confirm that you wish to delete the file. The File Name and two buttons are available for entering your decision.

- click on the DELETE IT button with the Select (left) mouse button to continue the deletion process. Another Requester will appear to reconfirm that you wish to delete the file. Again designating yes will complete the process.

This will delete the file.

Clicking on the SAVE IT button in the same manner will save the file, and abort the deletion process.

When deleting Worksheet files you should be careful that you do not delete any system files. You should only delete files you have created, not files that came with MaxiPlan.

Close a Worksheet

A Worksheet can be closed via three methods:

- clicking on the Close Gadget in the upper left-hand corner of the window with the Select (left) mouse button
- pulling down the PROJECT Menu and selecting the CLOSE WORKSHEET Menu Item with the Menu (right) mouse button
- pressing the right Amiga Key with the letter W

If data has been entered which has not been saved to the disk, MaxiPlan will display a Requester asking you to Save Changes? Three buttons are available to respond to this request: YES, NO, CANCEL.

- Responding YES will save the Worksheet file to the disk with changes.
- Responding NO will save the Worksheet file to the disk without changes.
- Responding CANCEL will abort the closing process.

Exit MaxiPlan

Before you can exit MaxiPlan, every Open Worksheet must be closed. If you attempt to exit before closing a Worksheet, MaxiPlan will not execute the exit. After every Worksheet is closed, you will be returned to the Control window.

Once you are in the Control Window

- pull down the CONTROL Menu with the Menu (right) mouse button
- select the QUIT Menu Item with the Menu (right) mouse button

At this point you will be returned to the Workbench window where you can either turn off the computer or open another program.

Chapter 9

LESSON TWO:

MANIPULATING THE WORKSHEET

Data, text, or formulas can be moved from one part of the Worksheet to another, replicated across a Range of Cells, or deleted from any Cell or Range. This manipulation of data, text, and formulas allows you to quickly build your Worksheets rather than keying in each and every Cell of the Worksheet by hand.

In this Lesson you will learn to:

- Insert Rows and Columns
- Delete Rows and Columns
- Copy Data and Formulas
- Cut Data and Formulas
- Paste Data and Formulas
- Clear Data and Formulas
- Fill in Data and Formulas

Making Room: Inserting Rows and Columns

Often it is desirable to move data, text, or formulas to a location on the Worksheet that is imbedded in the midst of other data. To make room for the new information you will want to either insert blank Rows or blank Columns. Whenever blank Rows or Columns are inserted, all Relative and Absolute Cell References are adjusted. See Chapter 11, "LESSON FOUR: CREATING FORMULAS" for more information on Cell References.

To insert a Row:

Move the Active Cell to any Cell in the Row where you want to insert a blank Row with the Select (left) mouse button. For example, if you wanted to insert a blank Row at Row 6, you would select one of the cells in Row 6.

- pull down the COMMANDS Menu, and select the INSERT Menu Item with the Menu (right) mouse button
- select the ROW Submenu Item

Now the Worksheet has a blank at Row 6, and the entries in Row 6 itself are now in Row 7. Row 7 is now in Row 8, and so forth down to the last Row of the Worksheet.

To insert multiple Rows:

- move the Active Cell to any Cell in the Row where you want to begin an insert of blank Rows
- click on the new Active Cell and drag downward the number of Rows that you want to insert. This will highlight a Range of Cells in a Column.
- pull down the COMMANDS Menu, and select the INSERT Menu Item
- select the ROW Submenu Item

Check#	Date	Amount	Deposits	Balance
235	2/4	181.88	500.00	675.00
236	3/4	25.00		650.00
237	3/7	50.17		599.83
238	3/8	25.00	230.00	804.83
239	3/9	128.00		676.83
240				
241				
242				
243				

In the Worksheet above, the Range (E4:E6) has been selected, resulting in the insertion of three blank rows in Rows 4, 5 and 6, as shown.

Check#	Date	Amount	Deposits	Balance
235	2/4	181.88	500.00	675.00
236	3/4	25.00		650.00
237	3/7	50.17		599.83
238	3/8	25.00	230.00	804.83
239	3/9	128.00		676.83
240				
241				
242				
243				

To insert a Column:

Inserting a Column is accomplished in a similar manner. You must move the Active Cell to the Column where the blank Column is to be placed and then access the appropriate Menu Items. Briefly the actions are:

- move the Active Cell to any Cell in the Column where you want to insert a blank Column by clicking on any Cell in the Column
- pull down the COMMANDS Menu, and select the INSERT Menu Item
- select the COLUMN Submenu Item

To insert multiple Columns:

- move the Active Cell to any Cell in the Column where the Range new blank Columns are to be inserted
- click on a Cell in the Column and drag to the right creating a highlighted Range of Cells in the Row
- pull down the COMMANDS Menu, and select the INSERT Menu Item
- select the COLUMN Submenu Item

When attempting to insert a Row or Column, you must only select one Cell, not the entire Row or Column by clicking on the Column letter or Row number, to executing an insertion.

Alternatively, you can access Insert Row with the F9 function key, Insert Column with the F10 function key.

Condensing: Deleting Rows and Columns

Rows and Columns can be removed, or Deleted, in a manner similar to inserting Rows or Columns. The DELETE Menu Item under the COMMANDS Menu can remove either one Row or Column as well as a Range of Rows and Columns.

When a Row or Column is deleted, the data in the deleted Rows and Columns is deleted as well. Any Relative and Absolute Cell References in Formulas to Cells in these Rows and Columns are adjusted. Thus when deleting Rows or Columns, you should double check the formulas remaining on the Worksheet to be certain that they still refer to the proper Cells in order to produce the desired result.

To Delete a Row

- select a Cell in the Row to be deleted with the Select (left) mouse button
- pull down the COMMANDS Menu and select the DELETE Menu Item with the Menu (right) mouse button
- select the ROW Submenu Item

To Delete Multiple Rows

- select a Cell in the first Row to be deleted and drag downward the number of Rows to be deleted. This will create a highlighted Range of Cells in a Column
- pull down the COMMANDS Menu and select the DELETE Menu Item with the Menu (right) mouse button
- select the ROW Submenu Item

To Delete a Column

- select a Cell in the Column to be deleted with the Select (left) mouse button.
- pull down the COMMANDS Menu and select the DELETE Menu Item with the Menu (right) mouse button
- select the COLUMN Submenu Item

To Delete Multiple Columns

- select a Cell in the first Column to be deleted with the Select (left) mouse button and drag to the right the number of Columns to be deleted. This will create a selected Range of Cells in a Row.
- pull down the COMMANDS Menu and select the DELETE Menu Item
- select the COLUMN Submenu Item

Manipulation Tools

The fundamental tools for manipulating the Worksheet are the commands:

- Copy
- Cut
- Paste
- Clear
- Fill

All of these commands, except Fill, are available as Menu Items on the EDIT Menu. Fill can be found under the COMMANDS Menu. Each command, with the exception of Clear, utilizes the Clipboard to accomplish its assignment. For example, when the contents of a Range of Cells are copied, they are actually saved to the Clipboard and are then available to be pasted onto a new location or several new locations on the Worksheet. The Clipboard currently holds a maximum of 100 Rows of data. Thus when moving sections of the Worksheet, keep the number of Rows handled at one time to 100.

Similarly, cutting a Cell or a Range of Cells from the Worksheet will copy the contents of the Cell or Range to the Clipboard as well as remove them from their current location on the Worksheet. The Clipboard will hold the contents of a cut Range to be pasted elsewhere on the Worksheet until a new Cell or Range is stored in the Clipboard.

In order to paste a string of text, a Formula, or a number; it must first be saved to the Clipboard via Cut or Copy. Once anything is stored in the Clipboard, it can be pasted any number of times on the Worksheet until the contents of the Clipboard is changed.

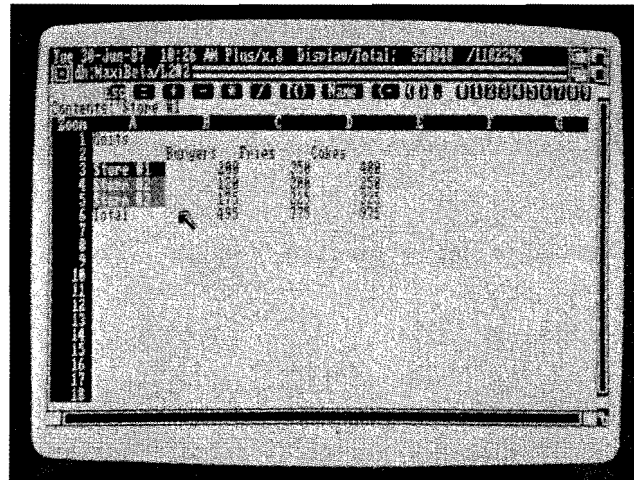
Each time you exercise either Cut or Copy it will override the current contents of the Clipboard. Thus care must be taken not to accidentally override any items in the Clipboard that will be needed later without first pasting them somewhere on the Worksheet.

Fill operates very similarly to Paste, with one important difference. With the Paste command, the contents of the Clipboard are pasted once per execution of Paste. However, with the FILL command the Clipboard contents are replicated repetitively over a selected Range.

The Fill Right command copies the Cells in the left most Column across the selected Range. While Fill Down copies the Cells in the top most Row down the selected Range.

Copy

Highlight a Cell or Range to be copied with the Select (left) mouse button. Pull down the EDIT Menu and select the COPY Menu Item with the Menu or right mouse button. In the following Worksheet, the Range (A3:A5) will be copied to the Clipboard.



Copy is also available by two other methods:

- pressing the F3 function key, or
- pressing the Right Amiga Key with the letter "C"

All three methods will save the contents of the selected Range into the Clipboard.

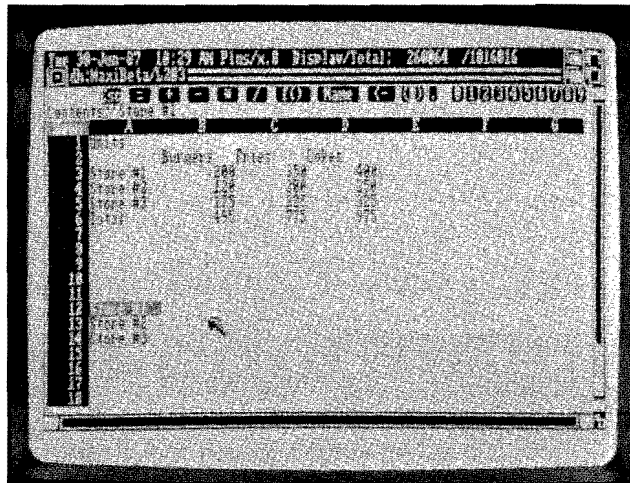
Paste

Once the Range is copied to the Clipboard, it can be replicated, or pasted, on another location on the Worksheet. Remember when selecting a site to paste a Range you must take care to find a blank section of the Worksheet which will be large enough to accommodate

the entire Range of Cells in the Clipboard. If you attempt to paste a Range into an area of the Worksheet with data, the new data will overwrite the existing contents of the Cells.

If you want to paste into an area with data, it is best to insert enough Rows or Columns to create a blank space to accommodate the Range in the Clipboard. (See the above section of this Lesson on inserting Rows and Columns).

In the updated Worksheet illustrated below, the Range (A3:A5) has been pasted on the Cells (A12:A14).



To Paste

select the Cell or Range to receive the data

- pull down the EDIT Menu
- select the PASTE Menu Item

Paste can also be exercised by:

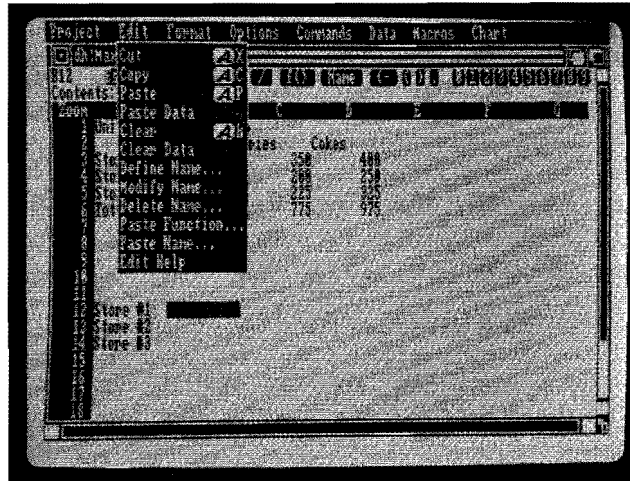
- pressing the F4 function key, or
- pressing the Right Amiga Key with the letter "P"

When the Paste command is exercised, the contents of the Cell as well as the format of the Cell are pasted onto the new location. If a Cell's contents is a Formula, it will be copied and any Relative Cell References automatically adjusted. Absolute Cell References will remain constant.

For example:

If Cell A2 contains the Formula $A1 + 10$, then if Cell A2 is pasted on Cell A3, the Formula will become $A2 + 10$. If the Formula was $\$A\$1 + 10$, where $\$A\1 is an Absolute Cell Reference, then the Formula in A3 would be $\$A\$1 + 10$.

If you want to paste the value of a Cell and not its Formula, you would use the PASTE DATA command under the EDIT Menu.



Cut

Cut operates very similarly to Copy. The major difference is that Cut not only saves the contents of the selected Range to the Clipboard, but also clears the contents of the Cells highlighted in the Range.

To Cut Data from a Cell or Range of Cells

- select or highlight the Cell or Range of Cells
- pull down the EDIT Menu
- select the CUT Menu Item

Cut can also be exercised by:

- pressing the F2 function key
- pressing the Right Amiga Key with the letter "X"

Clear

Clear removes the Cells' contents and format from the Worksheet, and does not replicate either the Cell's contents, format or Formula into the Clipboard.

To Clear the Contents of a Cell or Range of Cells:

- select or highlight the Cell or Range of Cells
- pull down the EDIT Menu
- select the CLEAR Menu Item

Clear is also available by:

- pressing the F5 function key, or
- pressing the Right Amiga Key with the letter "B"

If you wish to only clear the data from a Cell, while keeping the format in tact for the Cell or Range of Cells, select the CLEAR DATA Menu Item on the EDIT Menu.

Fill

Fill is a very useful tool for building Worksheets. The Fill command replicates the contents of a Cell repeatedly over a selected Range. Rather than first copying the contents of Cell to the Clipboard and then repeatedly pasting it over and over in each desired Cell, Fill performs all of these steps with a minimal of effort.

To Fill a Range of Cells with the Contents of the first Cell

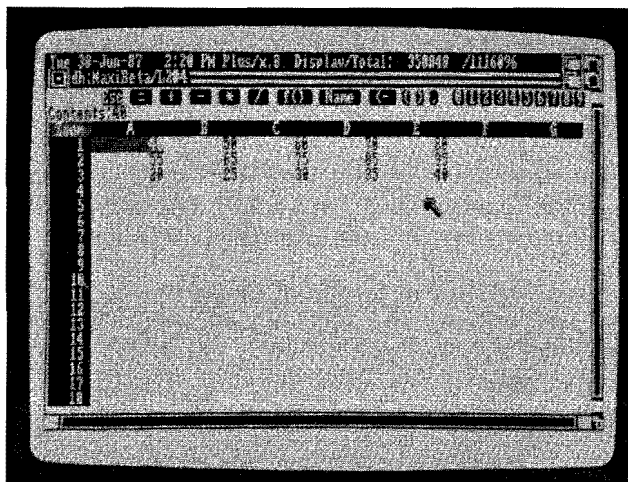
- select or highlight the Range of Cells to receive data
- pull down the COMMANDS Menu, selecting FILL Menu Item
- select either RIGHT or DOWN as appropriate on the Submenu

Fill can also be exercised by:

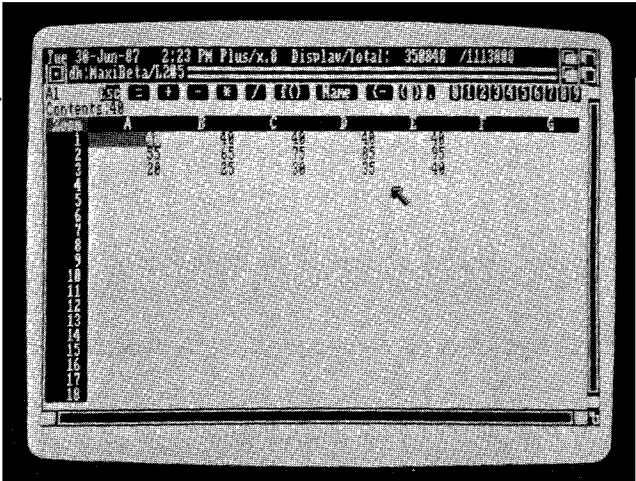
- pressing the F7 function key to fill right
- Pressing the Right Amiga Key with the letter "R" to fill right
- Pressing the F8 function key to fill down
- Pressing the Right Amiga Key with the letter "D" to fill down

Fill Right replicates the left-most Column across the selected Range. Fill Down replicates the top Row down the selected Range.

For example, key in the following data in a blank Worksheet.



If you select (highlight) the Range (A1:E1) and press F7 to Fill Right, the first Row becomes:

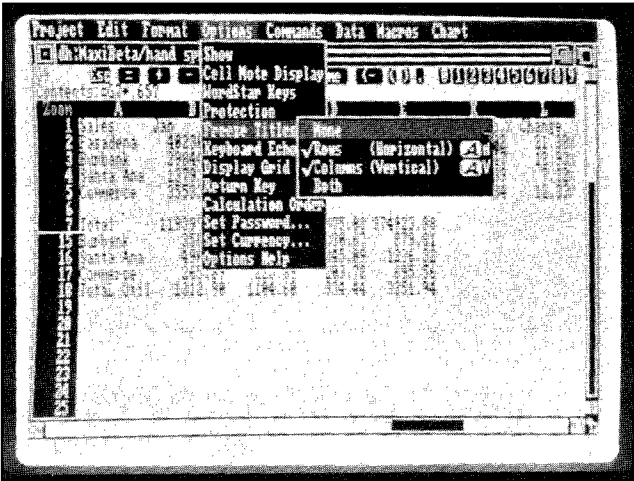


If now you select (highlight) the Range (A2:E3) and press F8 the Fill Down Command the set of numbers become the same for each Column.

Freeze Titles

The Freeze Titles feature allows you to fix the display of a set of Columns and/or Rows on the Worksheet window as you scroll through the Worksheet. Any of the first 18 Rows or 7 Columns can be frozen on the Window. However, if Row 4 is to be fixed in place with Freeze Titles, so must Rows 1 through 4. Similarly if Column C is to be frozen, then Columns A and B must also be frozen.

The Worksheet illustrated below depicts the steps to execute Freeze Titles.



- starting a Cell A1, select the Range which encompasses the Rows and Columns to be fixed, for example to fix Row 3 select the Range A1:A3
- pull down the OPTIONS Menu
- select the FREEZE TITLES Menu Item
- select one of the options on the Submenu

In our example to Freeze Row 3, you would select the Rows or Horizontal Submenu Item.

The options available include:

ROWS: horizontal, this can also be accessed by right Amiga Key with the Letter H Key

COLUMNS: vertical, this can also be accessed by right Amiga Key with the Letter V Key

BOTH: simultaneously fixes both Rows and Columns.

To remove Freeze Titles,

- pull down the OPTIONS Menu
- select the FREEZE TITLES Menu Item
- select the NONE Submenu Item.

Printing Frozen Titles

Printing Frozen Titles allows you to have the first few Rows or Columns printed out on every sheet when printing a particularly large Worksheet. This is particularly useful when you have labels in the first Rows or Columns which help understand what the data represents.

To Print with Frozen Titles

- follow the steps to Freeze the appropriate Rows, Columns or Both
- pull down the PROJECT Menu
- select the PRINT Menu Item
- select the appropriate Submenu Item, either PRINTER or FILE

Chapter 10

LESSON THREE:

FORMATTING CELLS, RANGES AND THE WORKSHEET

Formatting is the assignment of special characteristics to the data in a Cell or Range. This usually means the visual presentation, but a Cell can also be formatted for use of Protection, Password, or Cell Notes.

The visual Format can quickly disclose the type of data in a Cell or Range. For example, formatting data with a dollar sign and two decimal points conveys the data is currency. Numbers in thousands or millions are easier to grasp when formatted with commas. Text that is formatted in bold will stand out from normal text thus enhancing its impact.

Available Formats include:

- Column Width
- Alignment within Column
- Color
 - Background
 - Active Cell
 - Text
 - Data
- Numeric Data Options
 - General
 - Commas
 - Fixed Decimals
 - Currency
 - Percentage
 - Date
 - Time
 - Scientific Notation
- Text Data Options
 - Normal
 - Bold
 - Italics
 - Underline
- Grid Lines
- Protection

Password Cell Notes

Any Cell, Range, or the entire Worksheet can be formatted with a minimum number of Menu selections. Multiple formats can be specified for the same Range of Cells. For example, it is possible to show profits in a Cell with commas, in bold italics, and green pen color.

In this Lesson you will learn to:

- Format a Cell, Range, or the Worksheet
- Understand the application of each type of Format Option

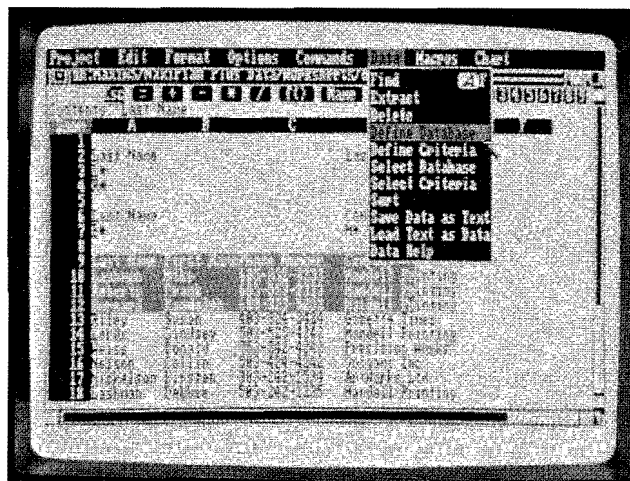
Formatting Steps

Whether you are formatting one Cell, a Range of Cells, or the entire Worksheet; the steps to assign Formats are the same.

- first: select the Cell, Range, or the entire Worksheet
- second: pull down the Menu with the Format Option, typically the FORMAT Menu
- third: select the Menu Item and any appropriate Submenu Options
- fourth: SAVE the Worksheet

To select or highlight a Cell, move the Pointer to the desired Cell, click on it with the Select (left) mouse button.

To select a Range, move the Pointer to the upper left hand Cell of the Range, then click and drag to the bottom right hand Cell while depressing the Select (left) mouse button. Finally, release the mouse button. See the following .



For larger Ranges, or the entire Worksheet, move the Pointer to the upper left hand Cell of the Range and click on it with the Select (left) mouse button. Move the Pointer to the bot-

tom right hand Cell, hold the Shift key and then click on the Cell. This will quickly select the Range.

For very large Ranges and Worksheets, you would repeat the above steps but use the Zoom mode after clicking on the upper left hand Cell.

To select a very large Range

- click on the upper left hand Cell
- enter Zoom by clicking on the word ZOOM in the upper left hand corner of the Worksheet window.
- after using scroll bars to bring the desired lower right Cell into view, click on the lower right hand Cell
- click on NORM to return to the Norm mode
- hold the Shift key, and select the bottom right hand Cell again.

This will select or highlight the entire Range.

Format Applications

What follows is a discussion of each available Format type. You are given specific examples of how the format option will enhance the information value of the data or make working with the Worksheet easier.

Column Width

Column width format dictates the maximum number of characters that can be displayed. If the Column's width is too small for the entry into one of the Cells of the Column, a series of #####'s will appear instead of the data entry in the Cell.

There are two methods for defining Column width, either using the WIDTH Menu Item on the FORMAT Menu or by moving the Column Width Gadget on the MaxiPlan screen with the mouse.

When using the FORMAT Menu and Menu Item WIDTH, a Submenu is available with three options:

- Standard
- Wide
- Specify

Standard is the default width of 10 characters. Wide is 31 characters. Specify allows you to key in a width of up to 65 characters wide.

When you select SPECIFY, a Requester appears with a prompt to key in the size of the Column.

To change the Column Width using the Format Menu:

- backspace twice to remove the current entry
- key in a new column width
- click on the OK button to accept the new width setting

To change the Column Width using the Mouse:

- move the Pointer to the Column Width gadget between the Column Letters
- click on the gadget with the left mouse button

This will highlight the left border of the Column

- slide the gadget to new position
- release the left mouse button

Example: If the Column width is 10, and the number 234789123789 is keyed into a Cell, the Cell will display #####. The Column width must be enlarged to at least 12 to show all of the numbers. If you elect to format the Cell with commas, the #####'s will appear again if the Column is not sufficiently wide enough to show the digits as well as the commas.

Column Alignment

Alignment dictates whether the Cell's contents are displayed flush to the right of the Column, to the left of the Column or evenly centered. How the data is aligned in a Column can help make a crowded Worksheet easier to read.

MaxiPlan has built-in defaults which dictate the alignment of data in a Cell depending on the type of data. Numeric data aligns on the right side of the Cell, while text data aligns on the left side of the Cell.

To override the default alignment, simply pull down the FORMAT Menu and select the ALIGNMENT Menu Item. In the associated Submenu are four options:

- Default
- Left
- Center
- Right

If the default option is checked, you can select one of the other options by moving the Pointer to the desired option with the Menu (right) mouse button. Whether data is text or numbers it will then be aligned according to your choice.

Example: The default option for numeric data is right alignment and for text is left alignment. If one of the entries in a Column of numbers is "NA" standing for not available, the NA will automatically align to the left since it is treated a text. To make the NA line up with the column of numbers, the default alignment can be changed to RIGHT for the Cell or Column containing the NA entry.

Alignment can also be accessed by using SHIFT F3. By using the F3 function key with the Shift Key multiple times, MaxiPlan will toggle between the three alignment options.

Color

MaxiPlan utilizes Color in a variety of ways. All the elements of the screen can be custom colored. For example, numbers and text can be highlighted by appearing in a contrasting Pen Color.

The Menu Item COLOR SELECTION under the CONTROL Menu provides the ability to custom mix colors. In the Enhanced Mode, up to 8 colors can be programmed while 4 are used in the Standard Mode. Using the Enhanced Mode will take up additional memory that may limit the maximum size of the Worksheet.

To actually alter the color of the various parts of the Worksheet window, you must use the PALETTE Menu Item under the FORMAT Menu. Selecting this command displays the Color Selection Requester. Here you can determine the background color of the Worksheet as well as the color of the Borders, the Grid, the Pointer, the Cursor, the Active Cell, and the text.

In addition, you can select a different color for the contents of a specific Range of Cells with the Menu Item PEN COLOR under the FORMAT Menu. Thus it is easy to color code subtotals, totals, headings, etc.

PEN COLOR is implemented like any other format. First you select the Cell or Range of Cells to be displayed in a contrasting PEN COLOR. Then access the FORMAT Menu, and select PEN COLOR and from the SUBMENU pick the particular PEN COLOR desired.

MaxiPlan's built-in function, COLOR can alter the color of data displayed based on the values of data in the Cells of the Worksheet. For example, if a particular total is negative, it could be displayed in red. See Chapter 20, the FUNCTION REFERENCE section of this manual for detail on the options for using the COLOR built-in function.

Example: A Cell in the Worksheet may contain a total of a Column. If this total were to exceed a certain number, such as the current sales high, you can create a statement with the COLOR Function which will automatically display the total in green if it is a new sales high. If in our example the current sales high was 20000, the sales were calculated at Cell B23 by summing Cells B2 through B20, and the pen color for green was 2, and the pen color for black was 3, the formula in Cell B23 would be written:

=SUM(B2:B20) + COLOR(B23 > 20000,2,3)

Numeric Data

There are a variety of Formats available for numeric data. You choose the format you need using the FORMAT Menu. The format selected can clarify the meaning of the data as well as making it easier to read.

The default numeric format is **GENERAL**. If there are digits after the decimal, the exact number keyed in will be displayed, otherwise the decimal is dropped and the data is displayed as a whole number.

Other choices for formatting numeric data include:

- **Currency:** Places the currency symbol specified in front and if desired behind the number and displays two decimal places. The currency symbol used by MaxiPlan is specified under the **SET CURRENCY** Menu Item on the **OPTIONS** Menu. To actually format a Cell or Range with Currency Symbols, you use the **CURRENCY** format under the **FORMAT** Menu.
- **Fixed:** Displays number in the decimal places specified with **Decimals** Menu Item
- **Date:** one of three combinations of day, month, and year
- **Decimals:** Specifies the number of decimal places from 0 to 9
- **Percent:** Displays the number as a percentage followed by the "%" symbol

Example: If a Column of data entries has a variety of decimal places, you can easily display them all in two decimal places by first specifying the number of decimal places with the **DECIMAL** Menu Item, then highlighting the Column Range and selecting the **FIXED** Menu Item.

Before Formatting	Formatted as FIXED
35.	35.00
234.567	236.56
101.1	101.10

Text Data

Text type data can be formatted to be bold, italic, or underlined. Normal, that is without bold, underline, or italics, is the default option. Formatting text such as Worksheet labels helps to distinguish one type of data from another. To select any of the other three options pull down the **FORMAT** Menu and select Menu Item **STYLE**. The available Submenu will give you the choice between:

- **Normal**
- **Bold**
- **Underline**
- **Italics**

Example: A Worksheet of a Budget may have department subtotals. To make them stand out against the detail entries they can be formatted in **Bold** or **Italics**.

	Pros.	Gross	abil/Comm's	JAN	FEB	MAR	Total
1 Prospects/							
2 Clients							
3 Proposals/	0.2						
4 Hardy Hardware		5688				1136	1136
5 Prime Paint		12368	2472				2472
6 Annie Motors		2472				628	628
7 Total Proposal		21448	2472		8	1816	4280
8 Refinement	0.3						
9 Carson Steel		38643		25322.5			25322.5
10 Jack & Jill		2472	12489				12489
11 Total Refinement		75623	12489	25322.5			37811.5
12 Underwriting	0.3						
13 Capitol Goods		13888	12428				13428
14 Daily News		4355	5894.5				5894.5
15 Total Underwriting		28353	18318.5		0		18318.5
16 Accounts/	0.7						
17 Smith Electric		958				665	665
18 Crescent Drugs		18888				7568	7568

MaxiPlan allows you to choose more than one option at the same time. Thus you could have subtotals in italics and grand totals in bold with italics.

To select multiple Submenu Items at the same time:

- select the Menu Item with the right mouse button
- while holding down the left shift key
- move the Pointer to the first desired Submenu Item
- click on the Submenu Item with the left mouse button
- move the Pointer to the second desired Submenu Item
- click on the second Submenu Item with the left mouse button
- repeat process until all of the Submenu Items have been selected
- release the left shift key and the right mouse button

Grid Lines

The Grid Lines format causes the display of a Grid for the entire Worksheet. Grid Lines can enhance the readability of the Worksheet. The Grid Lines format only applies to the Worksheet screen display. To have Grid Lines printed, you must specify this under the PRINT SET UP Menu Item on the PROJECT Menu.

To access Grid Lines, pull down the Menu OPTIONS and select Menu Item DISPLAY GRID. The Submenu is a toggle switch between ON and OFF.

Example: Grid Lines can be used to help keep data entry straight on a large Worksheet. When Grid Lines are used with Freeze Titles, it helps prevent data from being keyed into the wrong Cells.

Cell Protection

A Cell or Range of Cells can be formatted for Cell Protection. This will prevent someone accidentally altering the contents of a Cell such as a data entry or a Formula. While the process of actually formatting the Cell for Cell Protection is the same as for any other type of format, for Cell Protection to be in effect the PROTECTION Menu Item under the OPTIONS Menu must be selected and the Submenu Item ENABLED also selected.

To format a Cell or Range for Cell Protection, pull down the FORMAT Menu and select the PROTECT Menu Item. This has an associated Submenu for indicating YES or NO. See Chapter 15, "LESSON EIGHT: CELL PROTECTION" for further details.

Example: When a data entry person is using the Worksheet, you may wish to guard against inadvertent changes to existing data or any special formulas. The Cells containing this information can be formatted for Cell Protection before handing over the Worksheet for further data entry.

Password

Formatting Cells with Password will allow the contents of the Cell to be hidden. Thus if certain critical information is best kept under wraps, the Cells containing this data can be formatted with Password. When the Worksheet is opened, Cells with the Password format will appear with a series of dashes instead of the normal Cell contents.

If the user has access to view the information, they can key in the Password in a Requester and all of the dashes will be removed. See Chapter 15, "LESSON EIGHT: CELL PROTECTION" for further details.

Example: Sensitive data like salaries, commission formulas, etc. may be on a Worksheet which is used by clerical staff. To prevent these type users from seeing this data the Cells can be formatted with Password.

Chapter 11

LESSON FOUR: CREATING FORMULAS

Formulas are the vehicle for performing calculations in MaxiPlan. They are the mechanisms used to add a Row of numbers in the Worksheet, compare one Cell to another in the Worksheet, or look up a value based on the conditional evaluation of data in the Worksheet. Respectively these Formulas may result in the total sales for the quarter, a comparison of quarterly sales between divisions, and then the selection of a bonus formula if a quarterly sales target is met for the division managers. Thus Formulas are the means to an analytical end.

In this Lesson you will learn to:

- Structure Formulas
- Use Operators
- Use Operands
- Select Order of Calculation Precedence
- Nest Formula Commands
- Use Absolute and Relative Cell References
- Use Built-in Functions
- Show and Print Formulas

Structure of Formulas

Formulas are mathematical expressions. In MaxiPlan, Formulas always begin with an equals operator "=", thus making a Formula an equation. When creating a Formula, you can either key in the equals operator from the key board, or use the "=" Formula Button across the top of the screen. This informs MaxiPlan a Formula is about to be entered in the Cell. You will see the "=" appear in the Cell Contents Display.

Typically, a Worksheet displays the results or Values of Formulas in the Cells of the Worksheet, while the Formula is shown in the Cell Contents Display. It is possible to show the Formulas on the Worksheet by pulling down the OPTIONS Menu, selecting the SHOW Menu Item and then selecting the FORMULAS Submenu Item.

The remainder of the Formula is comprised of two elements:

- **Operators:** dictate the actions to be performed in the Formula such as add, subtract, divide, multiply, or compare
- **Operands:** indicate the values upon which the operators act such as a constant number, a Cell Address, a Range, a Named Range, an Expression, or the results of a Pre-defined Function.

An example of a simple Formula is:

=B3*6

where B3 and 6 are Operands and * is the Operator for multiply.

Types of Operators

Operators are of two types: Arithmetic and Logical. Arithmetic Operators return numeric results, while Logical Operators return either a 1 if the results are true or a 0 if the results are false. It is possible to include both types of Operators in the same Formula. The symbols for each type Operator are shown below.

Arithmetic

<u>Operators</u>	<u>Example</u>	<u>Result</u>
+	A + B	sum of A and B
-	A - B	difference between A and B
*	A * B	product of A and B
/	A / B	A divided by B
^	A ^ B	A to the B power

Logical

<u>Operators</u>	<u>Example</u>	<u>Result</u>
=	A = B	TRUE if A equals B
<	A < B	TRUE if A less than B
>	A > B	TRUE if A greater than B
<=	A <= B	TRUE if A less than or equal to B
>=	A >= B	TRUE if A greater than or equal to B
<>	A <> B	TRUE if A not equal to B

Type of Operands

Operands are the objects of the actions of the Formula Operators. They take many forms including:

Constants:

Any integer, decimal number, or exponential number. MaxiPlan accepts up to 15 digits

Cell Addresses:

A Cell Address will access the value contained in a Cell. Cell Addresses can be referenced one of two ways: Absolutely or Relatively. A discussion of both methods follows this section.

Ranges:

A collection of Cells, or a Range, can be referenced in a Formula. Ranges can be designated in a formula by either the Cell Addresses of the Range, such as B5:D6, or as a Named Range as described below.

A Cell Address version of a Range can be selected by one of three methods

- key in the Cell Addresses to be included, i.e. (B5:D8),
- click on the beginning Cell and drag to the ending Cell, or

For large Ranges

- click on beginning Cell
- reposition the Pointer to the ending Cell
- hold the Shift Key as you
- click on the Ending Cell

Named Ranges:

MaxiPlan allows you to assign meaningful names to a Cell or Range of Cells for later reference.

To name a Range:

- select the Range by one of the three methods outlined above
- pull Down the Edit Menu
- select Define Name Menu Item
- enter the Name in the Requester
- click on the OK button, or press Return

Now the Named Range will be listed on the MaxiPlan Name Requester

To Access a Named Range, follow the steps described below.

- click on the Name Formula Button

- select the appropriate Name in the Requester
- double click on the Name to incorporate into the Formula

Expressions:

A special type of Operand is an Expression. An Expression is a statement that is evaluated and then acted upon by the Operator. Typically it solves for either true or false, and then branches based on the results.

Expressions can compare contents of Cells, text strings, or the results of nested Formulas.

Built-in Functions:

Another type of Operand are Built-in Functions. MaxiPlan has over 70 Built-in Functions, which are pre-defined routines for accomplishing standard analytical tasks. Some examples would be a Net Present Value calculation, summing a Column of numbers, and finding the Standard Deviation of a set of numbers. These calculations can respectively be performed by the Built-In Functions NPV, SUM, and STDEV. A discussion of how to use Built-in Functions follows below. A detail list of Functions with examples of their use can be found in Chapter 20, the FUNCTION REFERENCE section of this manual.

Order of Precedence

MaxiPlan follows set rules for performing actions dictated by the Operators. Multiplication and division (* or /) calculations are executed before an addition or a subtraction (+ or -). Thus in the statement $A * B + C$, A and B are first multiplied and that result is added to C. Exponents have a higher precedence over multiplication and division, while the Logical Operators (=, <, >, <=, >=, <>) have the lowest priority of calculation.

Nesting

Nesting is a method to override MaxiPlan's Order of Precedence. The nesting is defined by a series of imbedded parenthesis. The Expression in the inner most set of parentheses is calculated first. Its result is in turn used in the Expression of the next outward set of parentheses. Calculation order begins with the inner most set and moves outward to until all Expressions have been performed. Thus if an addition or subtraction should be performed before a multiplication, the statement should be surrounded by a set a parentheses. For example:

$= 100 + (B4 * (B5 + (B6 * 2)))$

Cell References

As mentioned above, often Formulas use Cell Addresses as Operands. There are two different methods of referring to a Cell: Absolute and Relative. The two methods effect the how the Cell is referred to when the Formula is duplicated.

Relative Cell References:

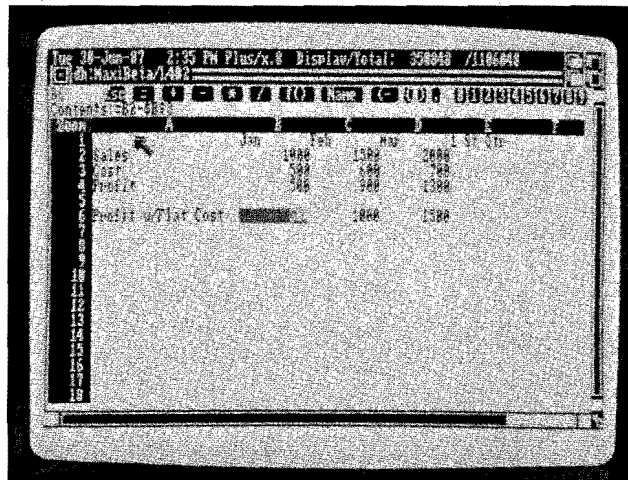
Relative Cell References always refer to Cells a specific number of Rows or Columns away from the location of the Formula. Thus when a Formula with Relative Cell References is duplicated with the Fill command or pasted onto another location on the Worksheet, Maxi-Plan finds the Cell that is the same number of Rows and Columns from the new site of the Formula as was accessed from the original Formula site.

For example: Suppose you have a Formula to calculate Profit at Cell B4 which is defined as being the difference between B2 where you have a Sales figure and B3 where you have a Cost figure.

The information in the B Column is for the month of January, while in Column C you have the figures for February. If you Copy the Formula at B4 and paste it at C4, since it is a Formula with Relative Cell References, it will be comprised of the difference between C2 and C3.

If the Formula at B4 is filled in over the Range (C4:E4), the Cells would respectively contain:

Cell Address	Cell Contents
C4	=C2-C3
D4	=D2-D3

**Absolute Cell References:**

An Absolute Cell Reference is used in a Formula when you want the Cell Address to be constant. Whenever the Formula is copied or replicated onto another location on the Worksheet, it always refers to that exact Cell Address.

For example, if the cost were to remain constant, then you could always use the same Cell in your Formulas. Thus the Formula for Profit in January at B6 would become:

=B2-\$B\$3

The referral to Cell B3 is made Absolute by inserting a "\$" in front of both the B and the 3 in the Cell Address. When the Formula is pasted on the Worksheet it will always refer to Cell B3. Thus when the Formula in B6 is filled in over the Range (C6:D6). The results are as follows:

Cell Address	Cell Contents	Value
C6	=C2-\$B\$3	1000
D6	=D2-\$B\$3	1500

Cell references can be partially Absolute, that is only the Row or the Column is constant. To denote a partial Absolute Reference the "\$" is inserted only in front of Column Letter if that is to be fixed, or the Row Number if that is to be fixed.

For example, if the cost is a fixed percentage of sales the Formula becomes

=B2-B\$2*.5

If filled in over the Range (C8:D8), the Cells of the Range would respectively contain:

Cell Address	Cell Contents	Value
C8	=C2-C\$2*.5	750
D8	=D2-D\$2*.5	1000

The final Worksheet appears as follows:

	A	B	C	D	E
1	Jan	Feb	Mar	Apr	May
2	Sales	1000	1500	2000	2500
3	Var Cost	500	750	1000	1250
4	Profit	500	750	1000	1250
5	Profit w/Var Cost	500	1000	1500	2000
6	Profit w/Fix Cost	500	750	1000	1250
7	Profit w/Total Cost	500	750	1000	1250
8	Profit w/Date Cost	500	750	1000	1250
9	Profit w/Total Cost	500	750	1000	1250
10	Profit w/Date Cost	500	750	1000	1250
11	Profit w/Total Cost	500	750	1000	1250
12	Profit w/Date Cost	500	750	1000	1250
13	Profit w/Total Cost	500	750	1000	1250
14	Profit w/Date Cost	500	750	1000	1250
15	Profit w/Total Cost	500	750	1000	1250
16	Profit w/Date Cost	500	750	1000	1250
17	Profit w/Total Cost	500	750	1000	1250
18	Profit w/Date Cost	500	750	1000	1250

Built-In Functions

MaxiPlan has a set of pre-defined formulas which perform specific calculations or comparisons. The results of a Function can be used either as Operands for other Formulas, or the Function can be a stand alone as a Formula in its own right.

Functions are comprised of the:

- Function Name
 - Argument or Arguments of the Function
- which are in the form

NAME(argument)

NAME(argument 1, argument 2,...)

Some Functions do not require an argument. Their results are the same regardless of an argument, while Functions that require arguments will return results which are dependent on the argument used.

If a Function requires more than one argument, the arguments are evaluated from left to right, and should be separated by commas.

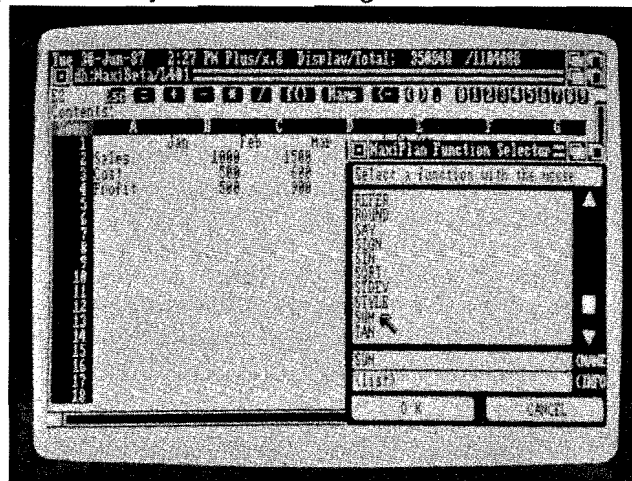
The Name of the Function defines the type calculation to be carried out. It's Argument is the value incorporated into the calculation. Arguments can be a Cell Address, a Range of cells, a Named Range, or the results of another Function. In some cases, an Argument is even a Worksheet File Name. Each Function requires its own unique type of Argument.

Accessing Functions

The MaxiPlan window has a special Formula Button for accessing Functions:

f().

Click on this button to display the MaxiPlan Function Selector window shown below. In this window you can scroll between the names of the over 70 built-in Functions. The window has an Info display which briefly describes the Argument needed for the Function.



To incorporate a Function in a Formula simply:

- click on the Function Formula Button
- click on the Function Name

the cursor automatically moves to the Cell Contents Display where you key in the appropriate Function Argument

- press the Return Key to accept the Function and its Arguments

The Cell will now display the results of the Function.

A Formula may only be the Function and its Argument. If that is the case, you must insert an equals sign before selecting the Function in the MaxiPlan Function Selector Requester.

Types of Functions

There are 9 types of Functions including:

- Statistical
- Financial
- Logical
- Database
- Mathematical
- Trigonometric
- Index
- Date
- Special

Chapter 20, the FUNCTION REFERENCE Section of the manual lists each Built-in Function alphabetically under its classification. The Index lists each Function alphabetically under "Function".

Show and Print Formulas

The Worksheet can be displayed with Formulas in the Cells rather than their Values using the SHOW Menu Item on the OPTIONS Menu. SHOW has two options in its Submenu, Values and Formulas. MaxiPlan automatically defaults to Values. If you select, Formulas, the Formulas will be displayed in the Cells that have Formulas as their contents.

If you print the Worksheet while the Formulas option is selected, the Worksheet will print with the Formulas. Often, the Column Width will have to be widened to display the entire Formula in a Cell. If it is not sufficiently wide, when the Worksheet is printed, only a portion of the Formula will appear in the printout.

Chapter 12

LESSON FIVE:

CONVERTING MaxiPlan DATA INTO A DATABASE

Turning the data entries of a Worksheet into a Database is a powerful analytical tool. MaxiPlan has the ability to treat any set of Rows and Columns of a Worksheet as a Database. This will allow you to Sort Rows, Extract Rows, or even Delete Rows based upon matching certain specifications.

Up to 63 Databases can be defined per Worksheet. The Columns included in the Database are the Fields of the Database. Each Column or Field of a Database contains one type of information to describe an item included in the Database. For example, if an address book is considered a Database, then one Field would be the person's name, another would be their phone number, a third would be their street address, and so forth.

Records of the Database are represented by the Rows of the Worksheet. A Record is the collection of information about one particular item in a Database. Using the address book example, a Record would be all the information associated with Mary Smith.

Records can be sorted alphabetically or in numeric order based on information in any of the Fields. MaxiPlan can selectively extract certain Records or selectively delete Records from a Database. Up to 63 such sorts, extractions, or deletions can be defined per Database. However, the total combination of Named Ranges, Named Criteria, and Named Databases is 64 per Worksheet.

MaxiPlan allows simultaneous ascending and descending sorts on any number of Fields. The Sort Criteria governs the order that each Field is evaluated for ranking. Thus the Records of the address book could first be ranked descending by last name, then ranked ascending by city, and finally ranked descending by phone number.

In this Lesson you will learn to:

- Open an Existing Database
- Create a New Database and Criteria
- Remove a Database and Criteria
- Edit a Database Range or Criteria Range
- Use "wildcards" for finding Record matches

- How to work with text, numeric, and date data
- What are the Reserved Words for Databases
- Sort Records
- Find Records
- Extract Records
- Delete Records
- Convert Data to Text Format
- Import Text Data
- Execute an Easy Sort based on the Contents of One Column

MaxiPlan Database Insights

For those familiar with Database capabilities on popular spreadsheet programs such as Lotus 1-2-3(tm), there may be some initial confusion as to how to set up a Database with MaxiPlan. MaxiPlan requires that you physically select a Range in the Worksheet and name it as a Database. It also requires that certain Cells or Ranges distinct from the Database Range be set aside to key in Database Criteria. These Ranges too must be named.

When defining a Database in MaxiPlan, the first Row included in the Database must contain the names of the Fields included in the Database. Thus, if you want to define a middle section of a Worksheet as a Database, you must make certain that the first Row of the Database Range contains labels or Field Names. If this is not the case, you must insert a Row at the beginning of the Database to key in labels or Field names before selecting the Range of Cells for the Database.

Open an Existing Database

On the MaxiPlan Utilities/Data Disk accompanying the program are Drawers containing example Worksheet files. Open the Database Worksheet drawer and select the Database Demo Worksheet. This will bring up a Worksheet which has the pre-defined Database named DATABASE defined within it. You will note that the Database Demo Worksheet contains a list of names both last and first, phone numbers and company affiliations.

To select an existing Database, follow the steps below.

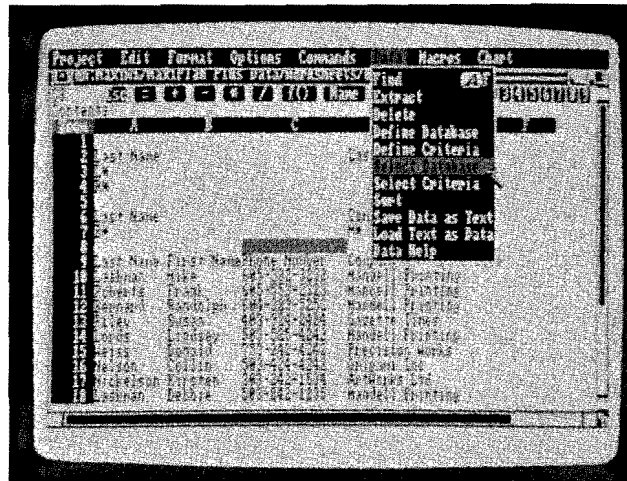
- pull down the DATA Menu
- select the SELECT DATABASE Menu Item

This brings up the MaxiPlan Name Selector Requester listing the Database in our example. We want to select DATABASE.

- double click on the name DATABASE in the MaxiPlan Name Selector Requester

Open an Existing Database Criteria

An existing Database Criteria is accessed in the same manner as an existing Database. However, instead of SELECT DATABASE, the SELECT CRITERIA Menu Item is used.



Any Database criteria subsequently selected will be applied to the currently selected Database, in this case the Database named DATABASE.

How to Create a New Database and Criteria

Before any sorting of Rows or Records can be conducted, a Database must be defined, as well as the Criteria for manipulating the Records. Once the Database and Criteria are defined, they are automatically selected during that particular MaxiPlan session. If you wish to use another Database or Criteria, you must select the different Database or Criteria as described above.

The steps to Create a Database are:

- key in the Field Names in the top Row the Range to be the Database
- key in a sample of Records in the Rows below
- select the Range of Cells keyed in
- pull down the DATA Menu
- select the DEFINE DATABASE Menu Item
- key in the name of the Database taking care to select a Name not already used for some other named item on the Worksheet
- accept the name by clicking on the OK Button

The following illustration depicts selecting a Range and using the DEFINE DATABASE Menu Item.

No matter which Criteria Form is created, each Field Name of any Database Criteria must exactly match character for character as it is shown in the Database. If the capitalization is different, or blanks used differently MaxiPlan will assume they are two different Fields.

To continue define a new Database Criteria:

- key in the appropriate type of Database Criteria in an area of the Worksheet where you will not be inserting data
- select the Range of Cells comprising the Database Criteria
- pull down the DATA Menu
- select the Menu Item DEFINE CRITERIA
- key in the name of the Database Criteria taking care to select a Name not already used for some other named item on the Worksheet
- accept the name by clicking on the OK Button

Now you have created both a Database and a Database Criteria for manipulating the Records of the Database. If you created a Sort Database Criteria, you can now execute Sort by pulling down the DATA Menu and selecting the SORT Menu Item. Similarly, if you created a Find or Delete Database Criteria these can be executed by selecting the Menu Items FIND and DELETE respectively. The Extract command is also on the DATA Menu, however care must be taken to move the Active Cell to an area of the Worksheet with enough blank Rows and Columns to accommodate the Records to be extracted. When the EXTRACT Menu Item is selected, it actually copies the Records meeting the Extract Criteria and pastes them at the location of the Active Cell.

More detail is given below about creating the different types of Database Criteria.

Use of Wildcards

When matching text in a Database Criteria, you may want an exact match of every character, or you may want to use Records that fit a broader criteria such as all last names that begin with the letter G. There are three wildcard characters to help locate Records by broader matching criteria. The three characters are:

- | | |
|---|---|
| * | - used to match zero or more characters |
| ? | - used to match a single character |
| ~ | - used to negate matches |

Below are examples of the usage of these wildcards and the results to be expected.

<u>Criteria</u>	<u>Result</u>
J*	Every Record in this Field beginning with J
~ Smith	Every Record in this Field except for Smith
J??ps	Every Record in this Field 5 characters long, beginning with J and ending in ps
~ J*	Every Record not beginning with J.

Working with Text, Numeric, and Date Type Data**Text Data**

All of the above examples have been illustrations of text data. MaxiPlan's database capabilities can be applied to numeric and date type data as well.

Numeric Data

Strict numeric data will sort exactly by value, i.e. 40 comes before 200 in an ascending sort. However, when creating a Find, Extract, or Delete type of Database Criteria each match must begin with an equal sign to signify it is numeric data.

To Sort numeric Fields

Sales by Zip	<---- name of Sort Criteria
Sales Zip	<---- names of Fields
2 -1	<---- order ranking of sorts

This criteria will first numerically rank the records in descending order by zip code and then in ascending order by sales volume within each zip code.

To Find a single exact numeric match

Volume	<---- name of the Find Criteria (not required)
Sales	<---- name of the Field
=20000	<---- matching criteria

Note: You must use two equal signs to execute a numeric match.

This criteria will find the Records with exactly 20,000 in sales volume.

To Find multiple exact numeric matches

Volume by Salesman	<--- name of the Find Criteria (not required)
Sales Last Name	<--- name of the Fields
=10000 J*	<--- matching criteria
=20000 G*	<--- matching criteria

This criteria will find Records that either have last names beginning with the letter J and have exactly 10,000 in sales volume or have last names beginning with the letter G and have exactly 20,000 in sales volume.

To Find numeric Records greater than a certain number

Top Tier	<---- name of the Find Criteria
Sales	<---- name of the Field
=>50000	<---- greater than criteria

This criteria will find Records that have a sales volume greater than 50,000.

To Find numeric Records equal to and greater than a certain number

Record Breakers	<--- name of the Find Criteria
Sales	<--- name of the Field
= > = 30000	<--- equal to and greater than criteria

This criteria will find Records that have a sales volume equal to and greater than 30,000.

To Find numeric Records less than a certain number

Bottom Tier	<--- name of the Find Criteria
Sales	<--- name of the Field
= < 25000	<--- less than criteria

This criteria will find Records that have a sales volume less than 25,000.

To Find numeric Records equal to or less than a certain number

Drops	<--- name of the Find Criteria
Sales	<--- name of the Field
= < = 10000	<--- equal to and less than criteria

This criteria will find Records that have a sales volume equal to and less than 10,000.

To Find numeric Records within a Range of certain numbers

Middle Group	<--- name of the Find Criteria
Sales	<--- name of the Field
= > 20000	= < 50000
	<--- range criteria

This criteria will find Records with sales volumes above 20,000 and below 50,000.

Date Data

Working with Date Data is a bit more tricky. The Date Format on the Format Menu is used with dates entered as continuous calendar numbers, it formats these numbers into recognizable dates, i.e. 2-Jul-85. However, since they are based on the underlying number of days since January 1, 1978, they will sort quiet easily.

However, a more typical scenario is keying in the dates as text strings for manipulation. For example, if you key in 12-3-85 the result will be -76, since MaxiPlan interpreted this as subtracting 3 from 12 and then subtracting 85 from the result. This date must be keyed in as a text string in order to not perform the calculation, i.e. '12-3-85.

When MaxiPlan does sort such a number, it first sorts by the numbers before the first dash, then by the second set of numbers, and finally by the last set of numbers. Thus in an ascending type sort, all the February dates will be together before the March dates, even

though February 1978 occurred after March 1953. Thus to be certain dates sort correctly the year should occur first, then the month, and finally the day, i.e YY-MM-DD.

Another trick when sorting Date Data is to make certain the single digit months and days begin with a zero. For example, rather than keying in 85-2-3, it should be 85-02-03. This will force the initial 0 to be evaluated before the initial 1 in the date 85-11-12, otherwise November represented by 11 will occur in an ascending sort before February represented by 2.

When using Date Data in a Find, Extract, or Delete criteria format, you can use wildcards and conditional operators.

To find dates after 1980

Post 1980	<----	name of Find Criteria
Date	<----	name of Field
=<1980-**-**	<----	matching criteria

This criteria will exclude dates with the year 1980.

However, when trying to perform conditional finds, extracts, and deletes of dates, it is best to key in each element of the date as a number in a separate field of the database. For example,

To find dates after February 1980

Post 02-80	<----	name of Find Criteria	
Month	Year	<----	names of Fields
=>02	=>80	<----	matching criteria

This criteria will select dates with years after 80 and also after the month 02.

Remove a Database or Database Criteria

A Database is removed in the same manner as any other Named Range. The command DELETE NAME under the EDIT Menu will bring up the MaxiPlan Name Selector Requester. This lists the names of all Named Ranges including Databases, and the Database Criteria Ranges. To remove a Database, click on its name and then click on the OK button. The data from a Database can be removed by selecting the Range encompassing the Database and using the Clear command. However, even though the data has been removed, the name of the Database will remain in the Name Selector Requester.

Edit a Database Range or a Criteria Range

The definition of a Criteria can be altered by editing the contents of a Cell describing the Criteria. Just click on the Cell to be edited and move the Pointer to the Cell Contents Display. With the Backspace Key you can remove characters, or simply key in additional characters with the keyboard. Press return to accept any altered Cell contents.

If the actual Range of Cells is to be altered, pull down the EDIT Menu and select the MODIFY NAME Menu Item. This will present the MaxiPlan Name Selector Requester. Click on the Name of the Database or Criteria whose Range of Cells you wish to change. By executing a single click on the Name of the Database, the Name will appear in the Name input area and its Range of Cells will appear in the Info input area at the bottom of the Requester. Move the cursor to the Info area and backspace to remove the existing Range. Then you can key in a new Range of Cells. Clicking on the OK Button will now make the Named Range apply to a different Range of Cells.

Database Reserved Words

MaxiPlan has reserved certain words to have a unique meaning to the MaxiPlan program. Thus it is best not use these words for naming any MaxiPlan object such as a Database Field, Database Range Name, Database Criteria Name, etc.

The following is the list of Reserved Words:

NAME

FIND

SORT

EXTRACT

DELETE

Sort Records

Reordering the Records of a Database according to a certain attribute or attributes of the data is a simple task for MaxiPlan. Records can first be ranked in ascending order based on one Field, then ranked by descending order in another Field. Any number of Fields or attributes can be included in the Sort.

The general format for a Sort Criteria is:

first row: The Names of the Fields each in a separate Cell

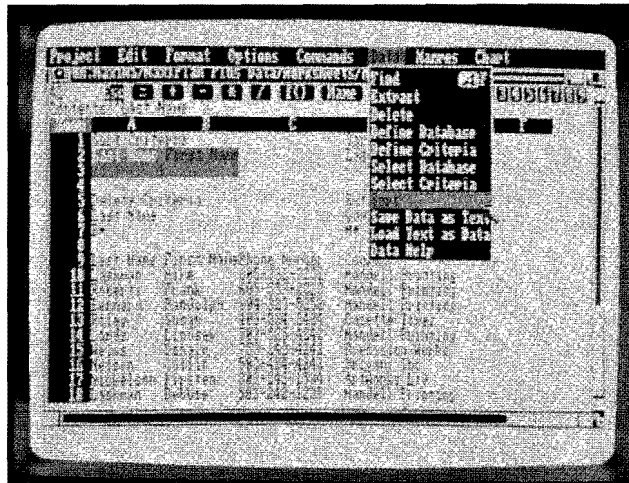
second row: A Number below each Field name dictating the order it is ranked in the sort with a minus for descending sorts and no minus for ascending sorts.

A negative sign before a sorting order number indicates it is a descending sort. If no sign is specified, it is understood to be positive and the sort will be in ascending order.

However, you may change the sorting order of a currently selected Sort Criteria by editing the Cells of the Sort Criteria Range displaying the sort order. For example, inserting a "-" in front of a sort order will make it descending, or interchanging a 1 and a 2 will make the Records first sort by the Field that was originally of second precedence.

Execute Sort

Once a Sort Criteria is defined as well as the Database, you can now proceed to Sort the Records of the Database. To actually execute a Sort you follow the steps shown in the illustration.



- pull down the DATA Menu
- select the SORT Menu Item

If you have not yet selected a Database upon which to conduct the Sort, the MaxiPlan Name Selector Requester listing the named Database Ranges defined for the Worksheet is automatically displayed. You must select the appropriate Database by a double click on the Database name. If this should be displayed, for our example select DATABASE.

If you have not yet selected the particular Sort Criteria, the MaxiPlan Name Selector Requester for Database Criteria will be displayed. You must select the appropriate Named Range which describes the particular Sort Criteria. Select SORTING CRITERIA should this window be displayed.

If a Database and Database Criteria were used earlier in the MaxiPlan session, MaxiPlan will automatically refer to the last accessed Database and Sort Criteria until you override its default by manually selecting another Database by pulling down the DATA Menu and selecting SELECT DATABASE Menu Item. Changing to a different Database Criteria Range is accomplished by selecting the SELECT CRITERIA Menu Item.

Find Records

Finding a Record or Records involves analyzing each Record of the Database to see if certain Fields of the Record match the Find Criteria. This is similar to using an Address Book where you typically want to match a specific first and last name.

Define the Find Criteria Range

The format for a Find Criteria Range as well as Extract Criteria and Delete Criteria take the same form. The First Row must contain the names of the Fields or labels of the Columns of the Database. Subsequent Rows contain the actual matches for either finding Records, extracting Records or deleting Records.

In general, the layout of a Find Criteria Range is as follows:

	I	J	
2	Field 1	Field 2	<----names of Fields in Find Criteria
3	Match 1	Match 1	<----First Match, or
4	Match 2	Match 2	<----Second Match

When conducting the matches, MaxiPlan will only find Records which match in both Fields, that is all entries within each Row of the Find Criteria Range are matched together. However, MaxiPlan will "find" the first Record that matches any of the Rows of the Find Criteria Range. Thus a Find will be satisfied by Match 1 in both Field 1 and Field 2 or with the Match 2 in both Field 1 and Field 2.

To find a single Record

The following criteria will find the Record for Lindsey Lincoln.

	G	H	
5	Find Number		<---- name of Find Criteria(Optional)
6	First Name	Last Name	<--- Field Names
7	Lindsey	Lincoln	<--- Desired Match

To find several Records

The following criteria will find the Records for Lindsey Lincoln and Debbie Lashman.

	I	J	
1	Find Number		<---- name of Find Criteria (Optional)
2	First	Last	<---- Field Names
3	Lindsey	Lincoln	<---- Desired Match
4	Debbie	Lashman	<---- Desired Match

Execute Find

To Find Records, you must first select the Database Range and the Find Criteria Range. Then you:

- pull down the DATA Menu
- select FIND Menu Item

This will then execute the Find command and the Active Cell will then be located at the first Record to match the Find Criteria. If you have more than one match, use the Up and Down arrow keys to move between the matching Records.

To exit Find, use the Escape Key or the ESC Formula Button.

It is always possible to edit the Cells in the Find Criteria Range if you want to find different Records.

Extract Records

It is possible to extract certain Records by a particular criteria and then copy them to another portion of the Worksheet for separate analysis or display. However, before an extraction can be executed, the Database must be selected as well as the Range containing the Extraction Criteria.

Execute Extract

Extracting Records and then pasting them onto a new section of the Worksheet requires the same basic steps you performed to Sort and Find Records, that is:

- select or define a named Database Range
- select or define a named Criteria Range
- then execute the Sort, Find, Delete, or Extract Menu Item

Extract differs from the other actions on the DATA Menu in that it requires you to select a Cell on the Worksheet at the exact location where you want the extracted Records to be pasted. The selected Cell will become the upper left hand corner of the Range listing the extracted Records. Thus you need to assess the space required to accommodate all of the extracted Records.

To actually extract the Records:

Move the Active Cell to a blank portion of the Worksheet making certain there is enough blank Cells to accommodate the copied Records

- pull down the DATA Menu
- select SELECT DATABASE Menu Item
- select the name of the Database for extracting the Records
- click on the OK button
- pull down the DATA Menu
- select SELECT CRITERIA Menu Item
- select the name of the Extract Criteria Range for the desired record extraction
- click on the OK button
- pull down the DATA Menu
- select the EXTRACT Menu Item
- select either ALL or UNIQUE from the Submenu.

If you select **UNIQUE**, only the unique Records matching the Extraction Criteria will be extracted. **ALL** extracts every matching Record.

The Extracted Records will be copied to the blank portion of the Worksheet in the Range anchored in the upper left hand corner by the Active Cell.

Delete Records

MaxiPlan allows you to selectively Delete Records by a specified criteria. For example, if there is data in the Worksheet Database that is associated with a certain date in a Field or Column listing dates, Records can be deleted for that particular date. Deleting records requires that a Database Range is defined, as well as a Delete Criteria Range.

Delete a Single Record

When executing the **DELETE** Menu Item on the **DATA** Menu, there are two choices available on the Submenu:

- SINGLE RECORD**
- MATCHING RECORDS**

To delete a particular Record, simply highlight the Field of the Record in the Delete Criteria. Pull down the **DATA** Menu, select **DELETE** and then select **SINGLE RECORD**. The Record will then be removed.

Delete Multiple Records

Multiple Records with a common attribute can be deleted in unison with the **MATCHING RECORDS** Menu Item.

Executing the **MATCHING RECORDS** command results in the Active Cell selecting the first record to match the Deletion Criteria and the display of a Requester with the prompt: "Delete this Record?" with a button to click on yes and another to click on no as a response. After your response, the next matching Record is highlighted and again the "Delete this Record?" prompt is again displayed. You must confirm the deletion of each Record selected by the Delete Criteria in the Database.

Save Database Records as Text

MaxiPlan allows you to save any section of the Worksheet defined as a named Database as a tab delineated text file for export to other programs. For example, a Database of names and addresses could be exported as a text file for merging into a form letter or for output as labels on a word processor program. MaxiPlan text files can be examined and modified by text editors such as TextCraft, EMACS, Ed, etc.

Text File Format

The first line of the text file contains the Field Names, these will be separated by tabs and the line will end with a return. Subsequent lines will be the Records of the Database with the contents of each Field or Cell separated by a tab and each Record or Row separated by a return.

Execute SAVE DATA AS TEXT

When you select the SAVE DATA AS TEXT Menu Item on the DATA Menu, MaxiPlan displays the MaxiPlan File Request window. You must key in the name for the text version of the file in the "File" prompt line. In addition, you can choose the directory for the text file in the "PATH" prompt line. MaxiPlan automatically defaults to the current directory.

Key in a name which is meaningful to you and which will help you distinguish between the text file version of a Database and the Named Range version of the Database. DO NOT USE A DUPLICATE NAME OF A MAXIPLAN WORKSHEET OR YOU WILL LOOSE YOUR ORIGINAL FILE.

Load Database Records as Text

MaxiPlan also enables you to import text files into MaxiPlan. Such text files may have been communicated over a modem from another Amiga or any other computer. They may be files from other programs or simply Databases from another MaxiPlan Worksheet. Regardless of the source of the text file, MaxiPlan can import a text file providing it is in the tabular delineated format discussed above, and there is sufficient expanded memory.

Execute LOAD DATA AS TEXT

To load a text file, either open a New Worksheet or select a blank section of an existing Worksheet large enough to accommodate the imported text file. The site of the Active Cell will be the top left hand anchor Cell for the text file.

Pull down the DATA Menu and select the LOAD DATA AS TEXT Menu Item. This will result in the display of the MaxiPlan File Request window which lists the names of all the available text files on the active drive. Click on the desired text file name to load the file into the Worksheet at the location of the Active Cell. The same text file can be loaded in any number of times into any number of Worksheets or locations on the same Worksheet.

Care must be taken to devote enough space on the Worksheet when importing a text file into an existing Worksheet. Imported Records will override the existing contents of Cells of the Worksheet.

Easy Sort

Often you will want to Sort the Records of a Database based on the contents of one Column or Field. MaxiPlan provides a quick and easy method for performing such sorts

without having to bother to define a Database Range and Database Criteria. The Menu Item EASY SORT on the COMMANDS Menu is used for sorts based on one Column.

When using Easy Sort, you must highlight or select a Range of Cells to be sorted. The left most column in the Range will be the basis or key for the sorting. Thus if you wish to include data in Columns to the right, you must copy the Column to the left of these Columns so they can be included in the selected Range.

Assuming that all the Columns to be sorted are in a contiguous Range, and the Column for the basis of the sort is the left-most Column, to execute Easy Sort

- select the Range to Sort
- pull down the COMMANDS Menu
- select EASY SORT Menu Item
- select one of the Submenu Items ASCENDING or DESCENDING

The screen will go blank for a moment and will display the message "Sorting in Process". You will then be returned to the Worksheet window and all of the Rows of the selected Range will be sorted based on the contents of the first Column on the left of the Range.

Chapter 13

LESSON SIX:

PRINTING AND DISK FILE OUTPUT

MaxiPlan has the ability to output print copies of either portions of a Worksheet or the entire Worksheet. In addition, Worksheets can be printed as Disk Files for later printing.

In this Lesson you will learn to:

- Customize printed output with the Print Set Up Commands
- Set Printer Preferences
- Print a portion of the Worksheet
- Print the whole Worksheet
- Output to a Disk File

Customizing Printed Output

Several options are available which control the appearance of the print output. These options are listed under the PRINT SET UP Menu Item on the PROJECT MENU. The print output options include:

- None - none of the following options is elected.
- Grid Lines - the Grid Lines will be printed delineating the boundaries of each Cell.
- Page Number at Top - a Page Number appears at the top of each page.
- Row/Column Headings - the Column Letters and Row Numbers are printed.
- Date/Time at Top - the Date and Time of the output is printed appear at the top of the printout. They are obtained from the Amiga Internal Clock.
- Title at Top - the Customized Title is printed at the top of the page.
- File Name at Top - the MaxiPlan File Name of the Worksheet is printed at the top of output.
- Set Print Title - when this option is selected, a Requester appears for keying in the Customized Title for the worksheet which can be printed at the top of each page of the output. You must first select Title at Top.

Any number of the options can be elected at the same time. Thus it is possible to have the Date, Time, File Name, Customized Title, Page Numbers, etc. appearing in each page of the printed output.

Set Printer Preferences

Printer Preferences on the Workbench include such options as:

- Margins
- Line Spacing
- Black & White vs Color Printer
- Letter Quality vs Draft Quality
- Character Type, etc

Most of the frequently accessed Printer Preferences can be set from the Printer Control Menu in the MaxiPlan Control Window. Please turn to Chapter 4 of this manual entitled: "ENTERING MaxiPlan: THE CONTROL WINDOW" for a further explanation of this Menu.

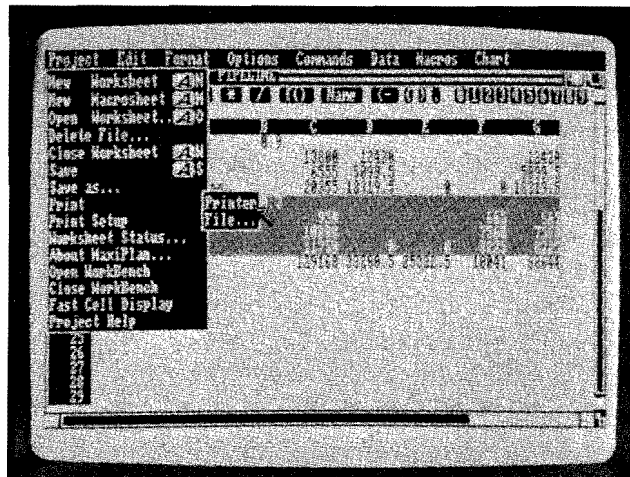
Printer Preferences on the Workbench can also be accessed by opening the Workbench using the Menu Item OPEN WORKBENCH on the PROJECT Menu. Both options are available from within MaxiPlan.

When both B & W and Color are checked off on the Printer Control Menu, this means the Preference Setting Grey has been selected.

MaxiPlan Worksheets print in character mode, thus they can not print in the horizontal aspect shown on the Printer Preferences. If you wish to print a Worksheet sideways, you can use one of several utility programs available. One popular one is known as Flipside(tm) by Brown Waugh. This product requires that the Worksheet be printed to a Disk File. See the section "Print to a Disk File" below on this topic.

Print a Range of the Worksheet

If you wish to only print a portion of the Worksheet, you must follow the steps listed as illustrated below.



- highlight the desired Range to be printed with the mouse
- pull down the PROJECT Menu
- select the PRINT Menu Item
- select the PRINTER Submenu Item

Before executing a PRINT command, you must make certain that the printer is hooked up and turned on.

Print the Entire Worksheet

To print the entire Worksheet, you must make certain only one Cell of the Worksheet is highlighted before you select the PRINT Menu Item on the PROJECT Menu. When one Cell is selected, this tells MaxiPlan to print the entire Worksheet, while selecting a Range tells MaxiPlan to print only the Range highlighted.

Thus, to print the entire Worksheet

- select one Cell of the Worksheet
- pull down the PROJECT Menu
- select the PRINT Menu Item
- select the PRINTER Submenu Item.

Print to a Disk File

Printing to a Disk File sends the File in the same form as it would be sent to a printer except it is sent to a File. When it is Printed to a Disk, a Requester appears for you to key in a new name and a specific location, or Pathname, for the File. You should be careful to not use a file name already in use. If an identical name is used, it will overwrite the existing file. It will now be in a format for printers, and not one that can be loaded into MaxiPlan. Thus if you are printing the Worksheet to a Disk File, you should create a back up copy of the Worksheet file on another disk or a make a duplicate copy of Worksheet using a different file name with the Save As command on the Project Menu. The Disk File can now be used as part of Print Spooling, transferred to another Amiga which does not have a copy of MaxiPlan, or in some cases used with other programs such as a sideways printing program.

To Print a Worksheet as a Disk File you:

- pull down the PROJECT Menu
- select the PRINT Menu Item
- select the FILE Submenu Item.

This will bring up the MaxiPlan File Selector window. You can save the Worksheet as a Disk File to any disk by inserting the disk into a drive and then selecting the drive with the drive buttons at the bottom of the window, or specify the Disk Drive name. You would then key in the Path and Name for the Print Disk File, and click on the OK button to accept the name.

Once you are satisfied with the output file name and its destination, simply click on the OK button to output the Worksheet as a Disk File.

Print Spooler

To use a Print Spooler, you must follow the instructions for using the particular Print Spooler to print the Disk File. A description of the Spooler which accompanies MaxiPlan can be found under the Chapter of this manual entitled "UTILITIES DISK".

It is also possible to print the file from CLI. See your Amiga manual for directions on how to Copy to the Printer from CLI.

Chapter 14

LESSON SEVEN:

PULLING DATA FROM OTHER WORKSHEETS

Often you will want to use information that is on a different Worksheet as part of the current Worksheet. This is usually referred to as Linking Worksheets. A common example is consolidating a budget or income statement of several divisions into one Worksheet. Each division would have a separate Worksheet, and the consolidation of all the divisions would be calculated on still another Worksheet.

MaxiPlan uses the REFER function to incorporate values in the Cells of your Worksheets from other Worksheets. It is accessed in the same manner as any MaxiPlan Function, via the Function Formula Button and then selecting the name REFER in the MaxiPlan Function Selector window.

The REFER Function pulls data from one particular Cell. Thus if more than one Cell is to be used, a new REFER Function must be constructed. It is not necessary to open the Worksheet containing the referenced cell. The REFER Function actually pulls data from the disk rather than from open Worksheets. If in fact the referenced Cell is altered, the updated Worksheet file must be saved to the disk with the SAVE command before the REFER function can access the changes.

In this Lesson you will learn to:

- construct the REFER Function
- diagnosis errors in the REFER Function
- cut, copy, and paste between Worksheets

Constructing the REFER function

There are two arguments to a REFER function:

- Worksheet PATH name
(which consists of the 'Disk Name:Drawer Name/File Name')
- 'Range Name' for the Cell

When the REFER function is selected on the MaxiPlan Function Selector window, the Info line of the window displays "worksheet-name, cell-name", to indicate the arguments of the REFER function.

An example using the REFER Function to link data from two Worksheets onto a third Worksheet is available on the MaxiPlan Utilities/Data Disk. On this disk you will find a directory named "Worksheets". Within that directory are three Worksheets named Division 1, Division 2 and Consolidated respectively. The Worksheet file named Consolidated incorporates data from Cells in Division 1 and Division 2. It is helpful to open the Worksheet File named "Consolidated" illustrated below to follow the material described in this section of the manual.

The screenshot shows a computer screen displaying a worksheet titled "MaxiPlan Plus Data/Worksheets/consolidated". The worksheet contains a table with the following data:

	A	B	C	D
1 Consolidated Quarterly Results - All Divisions				
2				
3 Income	\$24,556.00	\$25,250.00	\$26,388.00	
4 Expenses	\$15,335.00	\$23,235.00	\$20,500.00	
5				
6 Balance	\$9,221.00	\$2,015.00	\$42,243.00	
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				

An example of the REFER Function can be found in Cell C3 of the Consolidated Worksheet. The Cell Contents Display for C3 reads:

=REFER('MaxiPlan Data:Worksheets/Division 1','INCOME')

Note that both the Worksheet PATH name and the Cell Range Name are surrounded by single quotes.

First Argument: Worksheet PATH Name

The Worksheet PATH name is the directions the Amiga Operating System uses for retrieving a Worksheet File. It consists of either the Disk Name or Drive Name; followed by a colon ":"; then the Directory, or Drawer name; followed by a "/"; and finally the Name of the File. See your Amiga Reference Guide for further details concerning Disk and Path Name conventions.

If a Directory Name is used, it is separated from the File Name by a slash "/". The entire Worksheet PATH name argument is surrounded by single quotes, and is separated from the second argument of the REFER function, the Range Name of the Cell, with a comma.

Second Argument: Cell Range Name

A Cell is specified in the REFER Function argument as a Named Range. Typically it is easier to remember the name of a Range rather than a particular Cell Address. In addition, if you insert or delete Columns or Rows there is a danger that a Cell Address would no longer be valid. See the section of this manual on Naming Ranges for a further explanation on how to name a Cell.

In our Consolidated Worksheet example on the MaxiPlan Data Disk, at Cell C3, the REFER Function uses the Cell Name argument "INCOME". This will then pull data from the one Cell Named Range in the Division 1 Worksheet called "INCOME".

Moving the Active Cell to D3 on the Consolidated Worksheet reveals that Cell is linked to the "Division 2" Worksheet, Named Cell "INCOME". Similarly, Cell C4 refers to the "Division 1" Worksheet, Named Cell "EXPENSES" and Cell D4 refers to the "Division 2" Worksheet, Named Cell "EXPENSES". The Cells for the Balances of the two divisions are also linked to Cells in each of the division Worksheets.

Typical Errors when using REFER

As mentioned earlier, a common error is not including the correct drive name in the Worksheet PATH name. Another common error, is wrong syntax for the Worksheet PATH name such as inverting letters, misspellings, etc. Finally, it is possible that the Cell was not named or that it is under a different Range Name.

Recalculate after correcting an Error

Every time an error is corrected, MaxiPlan requires a recalculation to update references. To recalculate a Cell containing a REFER function:

- click on the cell containing the REFER function
- press the F1 function key or pull down the COMMANDS Menu and select Menu Item CALCULATE and the Submenu Item NOW, or
- press the F1 function key

This will result in an update of that particular cell.

Cutting, Copying, and Pasting between Worksheets ---

MaxiPlan allows you to easily move entire Ranges of data from one Worksheet to another via the Cut, Copy, and Paste commands. Both the originating Worksheet and the receiving Worksheet must be open.

Executing a Cut, Copy, or Paste requires saving a Range of data to the Clipboard. MaxiPlan can save up to 100 Rows to the Clipboard.

To execute a Cut or Copy from one Worksheet to another:

- open two Worksheets
- bring the originating Worksheet to the top of the screen
- select the Range to be Copied (or Cut)
- pull down the EDIT Menu
- select the COPY Menu Item
- click on the Front Switching Gadget to bring the receiving Worksheet to the top of the screen
- select location to paste data, the Active Cell will become the top left most cell in the range
- pull down the EDIT Menu
- select the PASTE Menu Item

Finally, you should save the altered receiving Worksheet with the SAVE or SAVE AS Menu Item on the PROJECT Menu.

Chapter 15

LESSON EIGHT: PROTECTING CELLS

When multiple users are using the same Worksheet, or when a data entry person is keying in data, it is sometimes appropriate to limit the access to certain vital portions of the Worksheet. For example, complicated Formulas could be altered or actual live data inadvertently changed if the Cells containing vital entries are not protected.

Limiting access to Cells takes two forms:

- **PROTECT:** prevents the contents of a Range of Cells from being accidentally altered
- **PASSWORD:** hides data from display until the correct Password is given. Cells subject to Password authorization are displayed with a series of dashes (-----) in the Cells. Once the Password is keyed in, the dashes are removed and the data displayed. The Cell does retain the Cell Protection feature until it is removed as described below.

Both types of limited access are available under the FORMAT Menu. It is possible to format a Cell for Protect, Password or both at the same time.

In this Lesson you will learn to:

- Prevent accidental changes to data with Protect
- Hide Data with Password

Guard Data with Cell Protection

In order for Cell Protection to take effect, two actions must occur:

- Cells must be formatted as PROTECTED under the FORMAT Menu
- Menu Item PROTECTION under the OPTIONS Menu must be selected. The Submenu lists two items: ENABLE and DISABLE. Enable turns on Cell Protection, while Disable disengages this format.

The objective of Protection under Options is to allow global editing of a large Worksheet when several scattered areas are protected. At the conclusion of the editing session, Protection can be turned back on.

To remove Cell Protection you can

- disable PROTECTION under the OPTION Menu

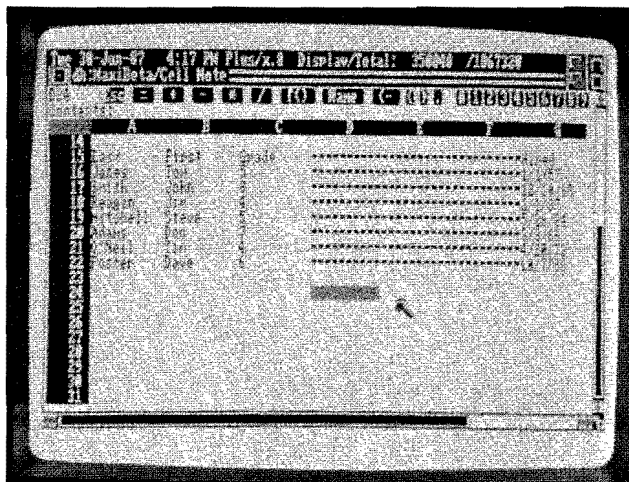
(This removes Cell Protection from all Protected Cells)

Change Protection Cell format for a particular Cell or Range by:

- selecting the Cell or Range
- selecting PROTECTED Menu Item under the Format Menu
- selecting NO Submenu Item

Hide Data with Password

While the purpose of Cell Protection was to prevent the accidental altering of data, formulas, or templates in Worksheets, Password is used to limit the display of certain data as well as protect it from altering. It is intended to keep data from being read by certain audiences. For example, if Personnel Data is shared, you may not want salary data available to every user of the data as shown in the Worksheet below.



Once a Cell is formatted with Password, it can not be removed. Only one Password can be specified per Worksheet, and it cannot be altered. Every time the Worksheet is saved and reopened, the user will have to key in the Password in order to view or modify any of the Password protected Cells.

To Format a Cell or Range with Password:

- highlight the Cell or Range
- pull down the FORMAT Menu
- select the PASSWORD Menu Item
- select Submenu Item Yes
- save the Worksheet to accept Password formatting

Next the Password must be defined. To stipulate the Password:

- pull down the **OPTIONS** Menu
- select **SPECIFY PASSWORD**
- key in Password in the Requester
- click on the **OK** button
- save the Worksheet to put Password in place

To view data in a Range formatted with Password, follow the steps below:

- highlight the Range
- pull down the **OPTIONS** Menu
- select **SPECIFY PASSWORD**
- key in the Password in the Requester
- click on the **OK** button to accept the entry

The dashes will be remove from all of the Cells formatted with Password. Now the user of the Worksheet can read all of the data. Cells formatted with Password will remain Cell Protected if Protection has been enabled. To alter any data in these Cells, the user will have to either remove the global Protection under the **OPTIONS** Menu or reformat individual Cells or Ranges of Cells.

Chapter 16

LESSON NINE:

CHARTS: VISUAL DISPLAY OF DATA

Certain types of analyses lend themselves to graphic representation. For example, tracking a trend over time with a Bar or Line Chart, or describing relative contribution with a Pie Chart. The visual image of the Chart tells the conclusion of the data faster than reading the actual data entries.

MaxiPlan has taken the Amiga's strong graphic capabilities and adapted them to produce outstanding visuals for business applications. Charts produced with MaxiPlan can be output to the screen, dot matrix printers, or laser printers. In addition, if you wish to further enhance the Charts with a Paint Program, MaxiPlan will export the Chart in IFF File format.

Charts can be specified as Column or Row oriented with a single mouse click. MaxiPlan can incorporate data from a Range which includes any number of Rows and Columns. Only memory size and practicality limit the amount of data that can be charted.

In this Lesson you will learn to:

- Specify Charts including styling, data range input, titles, labels, and scaling
- Use the options available for Charts
- Save up to 8 Charts per Worksheet
- Print your Charts
- Export of Charts in IFF File Format
- Use two-way dynamic links between data and Charts for instant updating of Charts and modification of data via manipulation of the Chart

Chart Menu

The Chart Menu can be found on the extreme right hand side of the Menu Bar. From this Menu you can create a new Chart, display an existing Chart, alter an existing Chart, and remove a Chart. The Chart Menu is comprised of the following Menu Items:

Draw
line
Bar
3D Bar

Stk Bar
Area
Pie
3D Pie
Step
X-Y
Hi-Lo
Remove
Chart Help

Chart Numbers

Both Draw and Remove have a Submenu listing the numbers of the 8 Charts. When a Chart is specified, the next open Chart Number is assigned. After the Chart is saved, the used Chart number will appear in bold type face, while the unused Chart numbers will be in shadow type face. The currently selected Chart number will appear with a check next to the number.

Saving a Chart

Any chart drawn and assigned a Chart Number will be saved whenever the Worksheet itself is saved.

Draw a Chart

After the Chart has been fully specified it can be redrawn at any time by simply selecting the DRAW Menu Item and selecting the number of the desired Chart.

Remove a Chart

To remove a Chart, select the REMOVE Menu Item and then select the particular number of the Chart to be deleted. This will free this Chart Number for reassignment to a new Chart.

Create a MaxiPlan Chart

Before beginning you must open the Worksheet containing your data, which in our example is the File named "Chart Data" in the Worksheets Drawer on the Utilities/Data Disk.

MaxiPlan will try to make some educated guess as to how to Draw a particular Chart Style based on the data you have selected to be incorporated in the Chart. In most cases, MaxiPlan's design choices will reflect your intentions, but you are also given the option to alter many of the Chart parameters in the Specify Window. Details of the available options are given further into this Chapter.

To quickly create your first Chart simply,

- open the file "Chart Data" in the Worksheets Directory on the Utilities/Data Disk
- highlight the Range B3:D6
- pull down the CHART Menu
- select one of the Chart Styles, we suggest Bar

Note: You only highlight the Range containing data, not labels. MaxiPlan automatically adds the labels from the Worksheet onto the appropriate areas of the Chart.

MaxiPlan will now draw the Chart in a window. Observe that MaxiPlan has decided that the Bar Chart is to be Column oriented. This means the data for a Row is depicted in clusters of Bars along the X or horizontal axis, where each Bar represents the data in each Column for that Row. The extreme data points of all of the data determine the range of the Y or vertical axis.

Chart Orientation

The orientation is determined by the shape of the initial range selected. If there are more Rows than Columns, MaxiPlan defaults to Columnar Oriented. Conversely, if there are more Columns than Rows it defaults to Row Oriented. However, either default can be quickly changed in the Specify Window described below.

For a sample of different ranges of data on the Chart Data file, MaxiPlan Charts' default orientation is as follows:

Selecting the Range B3:D6 results in Col Orientation

A	B	C	D	E	
1		1987 Sales			←Label
2	Jan	Feb	Mar	1st Qtr. Total	←Label
3 Nuts	<u>20</u>	<u>40</u>	<u>50</u>	110	←Data
4 Bolts	<u>45</u>	<u>35</u>	<u>60</u>	140	←Data
5 Screws	<u>15</u>	<u>20</u>	<u>45</u>	80	←Data
6 Washers	<u>30</u>	<u>15</u>	<u>40</u>	85	←Data

Labels

Selecting the Range B3:E6 results in Row Orientation

A	B	C	D	E	
1		1987 Sales			←Label
2	Jan	Feb	Mar	1st Qtr. Total	←Label
3 Nuts	<u>20</u>	<u>40</u>	<u>50</u>	<u>110</u>	←Data
4 Bolts	<u>45</u>	<u>35</u>	<u>60</u>	<u>140</u>	←Data
5 Screws	<u>15</u>	<u>20</u>	<u>45</u>	<u>80</u>	←Data
6 Washers	<u>30</u>	<u>15</u>	<u>40</u>	<u>85</u>	←Data

Labels

Selecting the Range B3:E5 results in Row Orientation

	A	B	C	D	E	
1			1987 Sales			←Label
2		Jan	Feb	Mar	1st Qtr. Total	←Label
3	Nuts	20	40	50	110	←Data
4	Bolts	45	35	60	140	←Data
5	Screws	15	20	45	80	←Data
6	Washers	30	15	40	85	←Data

Labels

Resize the Chart

The Chart Drawing window has most of the amenities of any Amiga window including a Size Gadget in the lower right hand corner. To enlarge the Chart, simply click and drag on the Size Gadget. The Chart can be made smaller via the same method.

Chart Window Menus

The Chart Drawing window has four Menus available for customizing a Chart:

Chart Control:

manages the general specifications for a Chart, and external activities such as printing, converting the Chart into IFF format, palette colors, etc.

Chart Type:

allows the user to explore different Chart Styles for a particular set of data.

Options:

lists options peculiar to a particular Chart Style.

Colors:

gives you control over the colors the Chart is rendered in.

The Menu Items or Chart commands will be discussed below.

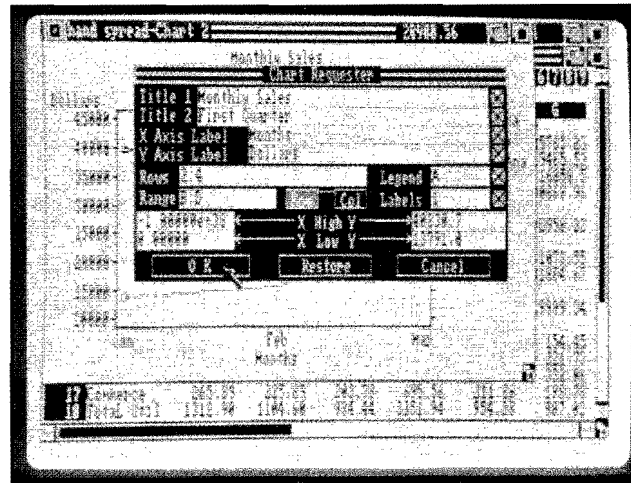
Customize the Chart with SPECIFY

The Chart Control Menu has the SPECIFY Menu Item. This is used to add customized Titles, alter the Rows or Columns included in the Chart's data range, Row versus Column orientation, which Rows and Columns are used for the Labels and Legends, etc.

To specify a Chart:

- pull down the CHART CONTROL Menu
- select the SPECIFY Menu Item

This will bring up the Chart Requester displayed below:

**Specifying Customized Titles**

The first two lines of the Chart Requester are for entering a Two Line Chart Title. Along the right hand side is a series of boxes. Selecting the box with the Pointer or hitting the Return Key instructs MaxiPlan to display the Text String keyed in to the left. You will know it is selected when a check appears in the box. MaxiPlan will accept a two line Title up to 40 characters long in each line.

Specifying Axes Labels

A Label can be keyed in for both the X and Y axis. The input area for Labels is below the Title specification area of the Chart Requester. Once an Axis Label is keyed in, you must check the box to the right of the input area. This can be checked off by pressing the Return Key after you input the Label, or by moving the Pointer to the box and clicking on the Box with the left mouse button.

Specifying Column vs Row Orientation

In the center of the Chart Requester are two boxes indicating if the Chart is Column versus Row oriented. Whichever of the two is highlighted, indicates the current orientation of the Chart as discussed above. To re-specify the orientation, click on either the box labeled COL or ROW in the center of the Chart Requester.

Specifying Rows and Columns as Data

MaxiPlan can pick and choose which Columns and Rows are to be included in a Chart's Data. However, the selectivity depends on whether the Chart is Column or Row oriented as discussed above.

A Column oriented Chart can pick and choose any Column in the Worksheet or Range of Columns for inclusion in the Chart's data. The Columns need not be next to each other, nor do the Ranges of Columns need to be contiguous. If the Chart is Row oriented, you can pick and choose the Rows to be included as Data.

In addition, if the Chart is Column oriented, you can specify a Range of Rows to be included. This shown as the Range on the Chart Requester window. Changing the Chart orientation to Rows will make the Range be a range of Columns, while the Cols input area will be re-labeled Rows and show Row numbers for the data.

Cols or Rows Input

Using the Column oriented Chart example, the following are valid Column specifications that can be keyed into the Cols input area of the Chart Requester:

C,D,E,F

C,D,F:H,K

N:P,U:V

A:G

If you are specifying a set of contiguous Columns it is best to specify them as a Range. Thus

C:E is preferable to C,D,E

Data Range Input

The Data Range for the Chart is range of Rows to be included in the Chart's data If it is a Column oriented Chart, or likewise the range of Columns to be included if the Chart is Row oriented. The Range input area is below the Cols or Rows input area of Chart Requester. Regardless if the Chart is Column or Row oriented, the Range must be a contiguous set of Rows or Columns as is appropriate.

For Chart 1 of the Chart Data Worksheet the Range is B:D, since the Range B3:D6 was selected for Chart 1, and Chart 1 is Column oriented. If the Chart orientation were changed to ROW, the Range would become 3:6.

Selecting Chart Labels and Legends

Labels for the horizontal axis and the Legend are automatically obtained from the Labels parallel to the highlighted data Range for the Chart in the Worksheet. For Row Oriented Charts, MaxiPlan defaults to Row 1 for the horizontal axis label and Column A for the Legend. Column Oriented Charts pick up the horizontal axis from Column A and the Legend from Row 1 as a default.

Should these defaults not be suitable, you can easily select different Rows and Columns for the Labels and Legends with the Specify Menu Item on the Chart Control Menu for the Chart Drawing window.

In our example, Chart 1 of the Chart Data File is Column oriented, thus the Legend in the upper right hand corner of the Chart Window shows 1987 as the Legend since it is picking up from Row 1. We actually want to pick up the Legend from Row 2. To select a different Label or Legend, move the Pointer to the Label and Legend input area of the Chart Requester, backspace and then key in a new Row Number and/or Column Letter. Thus in our example, key in 2.

Chart Scaling

The last set of displays delineates the scaling of the X and Y axes. Based on the highlighted Range in the Worksheet, MaxiPlan has pre-inserted a scaling range. By placing the Pointer in any of the displays, they can be edited and a different scale used. Note that the Chart Scaling is expressed as X high and low and Y high and low.

Save Chart Requester Modifications

Once you are satisfied with the specifications of the Chart, you must click on the Ok button of the Requester to accept the parameter changes. Clicking on Restore will retain all previous data from before your editing. Cancel closes the Chart Drawing Window keeping the original settings.

To return to the Worksheet window, click on the Close Gadget in the Chart Drawing window.

Chart Color Changes ---

On the CHART CONTROL window is the Palette Menu Item. This brings up the typical three sliding bar Color Requester. Use the Pointer to adjust the Colors to any desired combination. When the right color mix is achieved, click on the OK button. Restore will undo any changes and Cancel will undo and return you to the Chart Drawing window.

The COLORS Menu on the Chart Drawing window can specify the actual colors selected by the color palette for different elements of the Chart. This Menu includes:

- Border - for specifying the background color outside of the axes
- Titles - for specifying the color of text for the Title

- Text - for specifying the color of the text of the Labels
- Lines - for specifying the color of the axes
- Data Area - for specifying the color of the area within the axes.

Select Chart Type

Chart Type can be chosen from the CHART Menu on the Worksheet. If the Chart Type selected is not to your liking, a different Chart Type can be chosen from the CHART TYPE Menu in the Chart Drawing window.

As an exercise, select a different Chart Type such as Line or Area in the Chart Drawing window.

- pull down the CHART TYPE Menu
- select either the LINE or AREA Menu Item

MaxiPlan will now redraw the Chart.

To specify another Chart Type, repeat the above process.

Print a Chart

MaxiPlan can output Charts to a variety of printers such as dot matrix or laser printers. Specification of the Printer is done in the Workbench under the Preferences Drawer. See your Amiga Manual and the Chapter of this manual entitled "PRINTING AND DISK FILE OUTPUT".

To actually print your Chart 1 of the Range B3:D6 of the Chart Data Worksheet you must,

- make certain the printer is turned on
- select DRAW Menu Item on the Worksheet Chart Menu
- select the number 1 from the Submenu

This will draw Chart 1 in the Chart Drawing Window, then

- pull down the CHART CONTROL Menu
- select the PRINT Menu Item

The Chart will now be output to the printer.

Converting a Chart to IFF Format

Another Menu Item on the Chart Control window is CAPTURE. This Menu Item converts the Chart to an IFF format for export to either a paint program or some other type of application.

When you select CAPTURE, you will be presented with a Requester to key in a name for the Chart File. Choose a name that will convey the contents of the Chart. Be certain not to use the name of MaxiPlan Worksheet. If a duplicate name is chosen, the IFF file will overwrite the MaxiPlan file.

After it is saved as an IFF file, you will be able to open it from within a Paint program, word processing program, or any other application.

Chart Type Options

Each particular Chart style has an associated Options Menu in the Chart Drawing window. The options for each particular Chart style vary. What follows is a description of what each option does, and how it is used. This section is followed by further details on each particular Chart style and a listing of the options and special features for each Chart style.

Axis

You can elect to have the axis displayed or not displayed. Submenus give you control over each of the axis.

Edges

These are the boundaries around bars, pie slices, and areas. You can elect to display them for a crisper looking Chart, or leave them off if that is a more effective depiction of your data.

Grid

Grid lines are an extension of the axis scaling. You can elect to display either the X-axis grid only, the Y-axis grid only, or both grids. In the case of a 3D Bar chart, it is also possible to display the third axis, Z as well.

0,0 Break

This option is only used in X-Y Charts (scatter). It causes a break in the line that is being rendered. If this option is turned off and a coordinate of (0,0) is in the data it will be connected into the displayed line.

Scale

The actual numbers that appear along the left side of a Chart. With X-Y (scatter) Charts, there is a scale along the bottom as well.

Smart Labels

When Smart Labels is on, MaxiPlan will attempt to calculate the best spacing for displaying labels so that they do not overlap when the Chart Drawing window is of a small size. MaxiPlan will select which labels to print. Typically it will select every other label. If Smart Labels is turned off, if there is not enough room in the window the labels will be displayed on top of each other.

Symbols

These are small graphic objects that indicate the position of a data point on a Chart. The actual point is at the center of the symbol. Symbols are available for Line and Scatter Chart styles.

3 Variables

This option is found only in Hi-Lo charts. It tells MaxiPlan how to interpret the data in the Worksheet. If this option is on, MaxiPlan will be plotting with 3 Variables. In other words data will be extracted from the Worksheet in groupings of three, that is variable 1, variable 2, variable 3, variable 1, variable 2, etc. If this option is off, MaxiPlan will plot with two variables.

Ticks

These are the small lines or notches that appear attached to the axis. You can elect to either display them or leave the axis unmarked.

Special Features:

In addition to the Options available for each Chart, MaxiPlan has some special features that vary by Chart Type discussed below.

Point & Shoot

MaxiPlan allows you to see the numbers behind the picture. For example, a Pie Chart illustrates percentages. To see the total value in a particular slice you

- move the Pointer to the slice
- click with the left mouse button

The value of the data for the slice will be displayed in a special display at the top of the Chart Drawing window. Currently this feature is available on: Bar, Pie, Line, and X-Y charts.

To view data on a Line Chart select or Point to the Symbol at the juncture points along a line in the Chart.

Point & Modify

It is possible to alter the data on the Worksheet by changing the position of a component of the Chart. This feature is available on Bar as well as Line Charts.

To execute Point & Modify on a Bar Chart:

- move the Pointer to the Bar to be altered
- while depressing the ALT key, click on the left mouse button
- now slide the Pointer and the Bar to a new position
- release the mouse button and the ALT key

The Bar will be redrawn into the new position. When the Bar is moved, it also alters the associated data on the Worksheet that is represented by the Bar. As a rule, Point & Modify will alter a constant or the first Cell reference in a formula.

Note: the formula must not contain any nested statements (parentheses) in order for Point & Modify to work.

For example a Bar representing each of the following types of data would be altered by Point & Modify as follows:

=A1+A3: The Cell A1 would be changed and while the Cell A3 will keep its current value. If there is a formula at A1, it will not be changed. If you want to alter the value at Cell A3, the formula must be rewritten as:
=A3+A1.

=213 This will not change since it is not a constant, and there is no Cell reference in the formula.

213 Since this is a constant, when the Bar is repositioned the value will change.

3D Chart Rotation

3D Pie Charts rotate around the (horizontal) X-axis, while 3D Bar Charts rotate 90 degrees about both the vertical and horizontal axes.

To rotate a Chart, while holding down the Shift Key, click on the Chart with the Select (left) mouse button and drag it to a new angle of orientation on the screen. When you release the mouse button, the Chart will be redrawn.

X-Y Magnification Box

On the X-Y Chart, you can select any area of the Chart and magnify it to see the data. A "rubber band box" can be drawn to encompass as many data points as you like by pointing at an area while depressing the Select (left) mouse button and dragging the Pointer to create a "box" around the data. When the left mouse button is released, the boxed area will automatically be displayed in a magnified view.

create a "box" around the data. When the left mouse button is released, the boxed area will automatically be displayed in a magnified view.

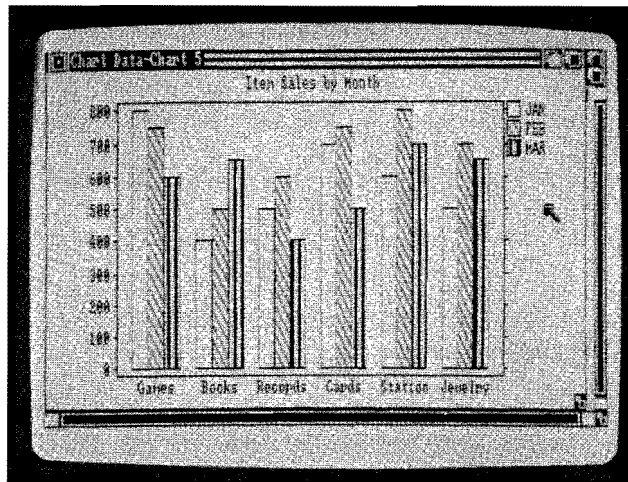
To return to the normal view, press the ESC key. This will remove the box and restore the normal view of the X-Y chart.

Bar Charts

Overview:

Bar charts are designed to organize categories of data in groupings. For example, all the sources of revenue grouped together by month. Each category is shown in a different color, but is the same color in each grouping. Thus at a glance the Bar chart shows both relative contribution of a revenue source to a particular month's sales as well as its performance over several months.

MaxiPlan determines the Row or Column orientation based on the size of the Range selected for the Bar chart. You do have the option to override MaxiPlan's default in the Specify Menu Item of the Chart Control Menu on the Chart Drawing window. Bar charts will automatically have a legend for each type of bar color. Labels for each axis and titles are added with the Specify command on the Chart Control Menu.



Options:

Axis X,Y
Ticks X,Y
Scale Y
Edges
Smart Labels

Each of these options is described in the OPTIONS section of this chapter.

Additional Features:

Bar charts have the "Point & Shoot" feature. By pointing at any Bar of the Chart and pressing the left mouse button the value and Worksheet Label for the data of the Bar will be displayed in the top of Chart Drawing window. The precision of the displayed value is dependent on the numeric format of the Cell in the Worksheet. If you need more or less precision, you must reformat the number of decimals for the Cell in the Worksheet.

Bar charts also have the "Point & Modify" feature. This feature is found on both Bar Charts and Line Charts. With this feature by changing the position of the Bar, you can change the data or formulas in the Cell on the Worksheet.

To reposition the Bar:

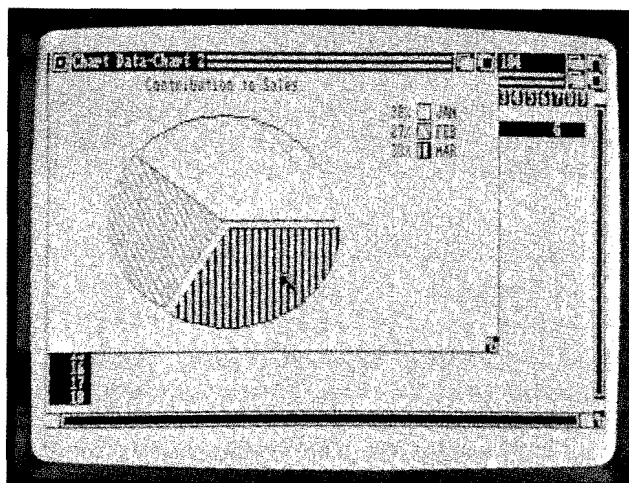
- press the ALT key
- while holding down the ALT key, click on the Bar with the Select (left) mouse button
- move the Bar to a new position
- release the ALT key and the mouse button

The Bar will now be at the new position.

Pie Charts

Overview:

Pie charts are used to represent relative contribution to the total of the data. The MaxiPlan Pie Chart not only depicts the relative contribution by the size of the slices, but also displays a legend listing the percentages next to each slice color.



MaxiPlan's Pie chart defaults to a Column orientation. When one Column is selected as the data, each Cell in the Column will be charted as a separate slice. If more than one Column

is selected in a Range, MaxiPlan will total the Cells across a Row and use that total as the relative contribution for that set of data. The labels for the legends are extracted from label Cells in a Column parallel to the selected Range. To add a title, use the Specify Menu Item on the Chart Control Menu.

Options:

Edges

This is discussed under the section of this chapter entitled OPTIONS.

Special Features:

MaxiPlan Pie charts can be exploded; that is, one slice moved out from the pie to show emphasis on that particular set of data.

To explode a Pie chart:

- press the CONTROL key
- while holding down the CONTROL key, point at the pie slice you wish to have exploded
- select the slice with the left mouse button
- release the CONTROL key and the mouse button

The slice will now be displayed in the new position.

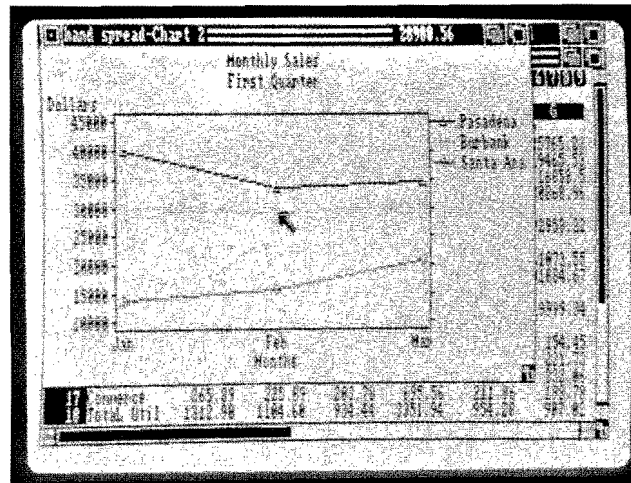
Any of the first 32 slices of a Pie can be exploded. To unexplode a slice of the Pie chart, again press the Control Key, point at the exploded pie slice, and press the left mouse button.

Pie charts also have the "Point & Shoot" feature. If you wish to see the associated value on the Worksheet for a slice, point at the slice and depress the left mouse button. The value for the slice will be displayed in the top of the Chart Drawing window. The precision of the display will depend on the precision of the data in the Worksheet Cell. If you would like to see more or less decimals, the Cell will have to be reformatted.

Line Chart

Overview:

Line Charts are best to show a trend over a period of time. MaxiPlan will automatically scale the axis based on the extremes of the data. Thus if one data point is entirely out of the range of the remainder of the data, the other lines will appear close together and it will be difficult to distinguish them from each other. Line charts are best for data which is within a uniform range.

**Options:**

Axis X,Y
 Ticks X,Y
 Grid X,Y
 Scale Y
 Symbols
 Lines
 Smart Labels

Each of these options is described in the OPTIONS section of this chapter.

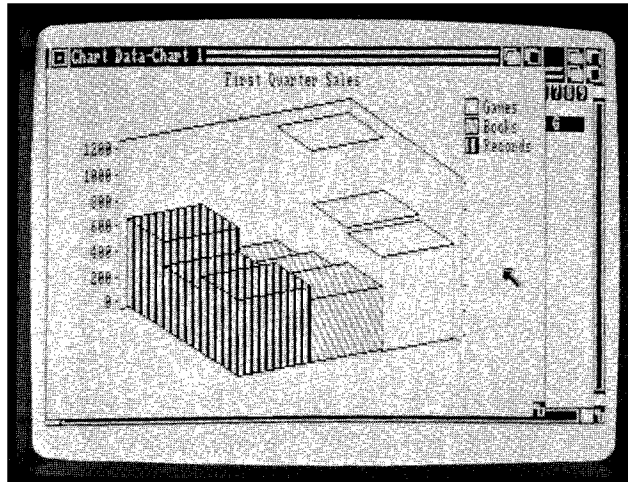
Additional features:

Line charts have the "Point & Shoot" feature. By pointing at a data point on the line with the left mouse button, the data value on the worksheet will be displayed on the top section of the window. The format displayed is the same as that given in the worksheet; to change the format or precision, you must change the format in the worksheet.

"Point & Modify" is a feature of Line charts as well. By selecting a data point on the line while pressing the ALT key, you can then move the line and change the data in the Worksheet. This feature will change a constant in a Cell or the first Cell reference in a formula. See the above discussion on Point & Modify for further details.

3D Bar Charts**Overview:**

3D Bar charts are for depicting several data points. If too many data points are included, the effectiveness of the 3D Bar chart tends to limit the communication ability of the Chart.

**Options:**

Axis	X,Y,Z
Ticks	X,Y,Z
Grid	X,Y,Z
Scale	Y
Edges	

Each of these options is described above in the OPTIONS section of this chapter.

Additional features:

Rotating the 3D Chart is useful if any of the data points are hidden from view. To change the display angle of a 3D Chart:

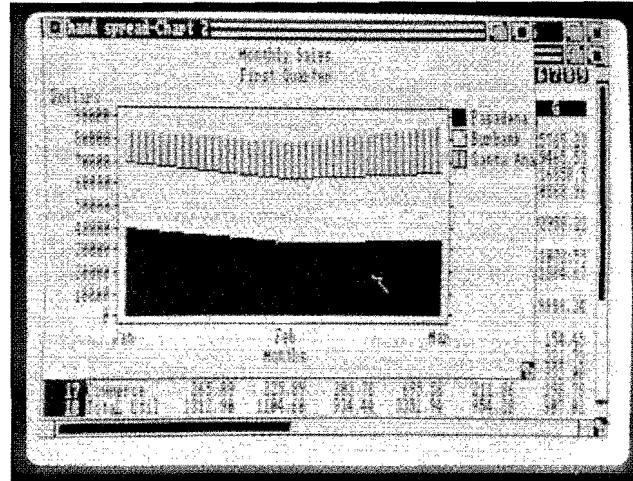
- hold down the **SHIFT** key and point at some interior point inside the 3D Bar chart
- while holding down the **SHIFT** key, press the left mouse button

The window will clear and only the 3D axes will be displayed.

To change the viewing angle, you move the Pointer and reorient the axes. As you move the Pointer you will see the relative position of the axes change. Once you have reached a satisfactory angle, release the mouse button and the **SHIFT** key.

Once the 3D Bar chart is redrawn, you can repeat the process if you want to change it further.

Area Charts



Overview:

Area charts are similar to Stacked Bar charts. They are a series of layers which contribute to the whole. The top of each layer represents the sum of the layers below it, while the thickness of the layer represents the relative contribution of that piece of data.

If the angle of any one layer, or the relative size of one layer to the rest becomes too extreme, it may be best to switch to another Chart style such as Stacked Bar.

Options:

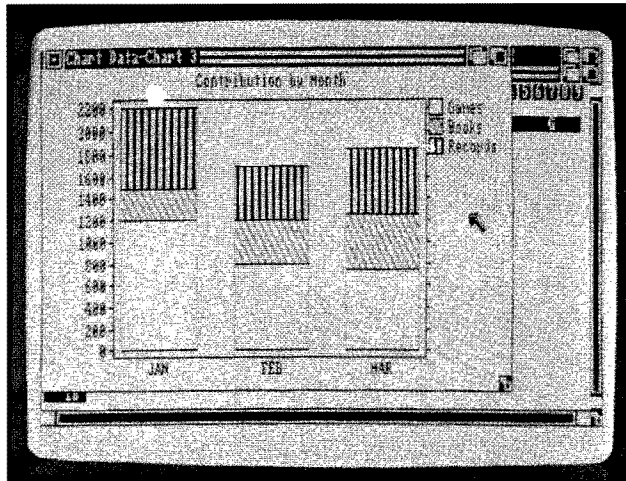
Axis X,Y
 Ticks X,Y
 Grid X,Y
 Scale Y
 Edges
 Smart Labels

Each of these options are discussed in the OPTIONS section of this chapter.

Stacked Bar Charts

Overview:

Stacked Bar charts are similar to Area charts. Each section of the Bar represents the value of the data, while the top of the layer represents the total of each of the layers below. Since the Stacked Bar does not have angles as does an Area chart, it is sometimes does a better job of communicating visually the data.

**Options:**

Axis	X,Y
Ticks	X,Y
Grid	X,Y
Scale	Y
Edges	
Smart Labels	

Each of these options is described in the OPTIONS section of this chapter.

Step Charts

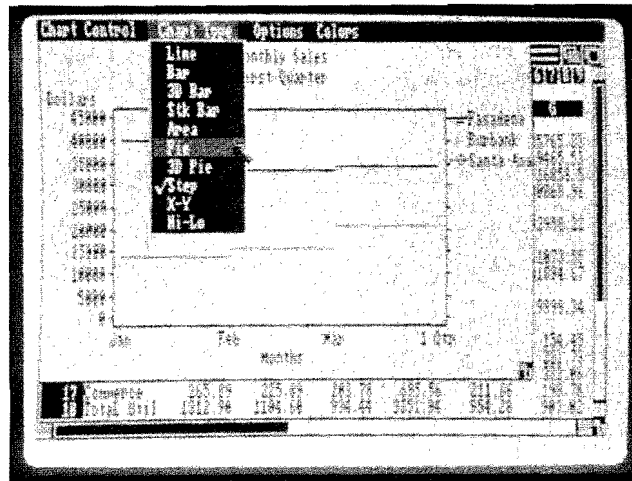
Overview:

Step charts are identical to Line charts with one small difference, data points are connected with steps rather than a straight line. It is best to use a Step chart when the data is incremented in larger amounts rather than small changes.

For example: If you were to use the Step chart to depict your bank account balance it would be charted in a jumpy or step fashion since you pay your bills in large aggregations of dollars and not one penny at a time.

Options:

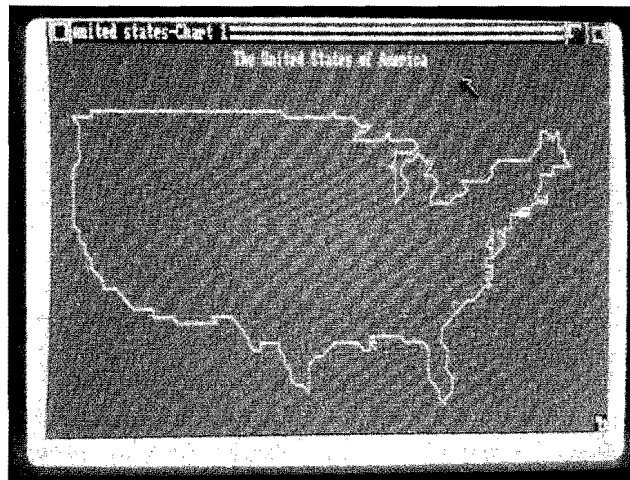
Axis	X,Y
Ticks	X,Y
Grid	X,Y
Scale	Y
Smart Labels	



X-Y or Scatter Charts

Overview:

X-Y Charts allow the most flexibility in rendering your data. With X-Y charts, the X axis is automatically calculated; this is different than any of the other Charts. With X-Y every data point is shown in the Range selected in the Worksheet. X-Y charts can even be used to draw complex shapes, 3 dimensional objects, text, or even pictures. When MaxiPlan extracts data for an X-Y chart, it begins by first deciding if the data is Column or Row oriented. To do this, it looks at the data and determines if there are more Rows or more Columns. If there are more Rows, then it is Column oriented, while if there are more Columns, it is Row oriented.



For example: A range of 3 Columns wide and 100 Rows is Column oriented. This is because when the data is laid out each Column is bigger than any Row.

Once MaxiPlan has determined the orientation, it takes the first Column if it has decided the data is Column oriented or the first Row if it determines it is Row oriented and plots that as the X axis. The remaining Columns become the Y values. In the 3 Column by 100 Row Range, the last two Columns would be come the Y values.

It may be desirable to have several lines that are the same color but not connected. To do this turn on the 0,0 break option in the OPTIONS Menu. This tells MaxiPlan to stop drawing a line whenever it finds a coordinate of (0,0) in the data, MaxiPlan will then continue drawing the line at the next coordinate thereby leaving a gap between the two line segments.

Options:

- Axis
- Grid
- Ticks
- Scale
- Symbols
- Lines
- 0,0 Break

Additional Features:

Magnification Box

X-Y or Scatter Charts have the Magnification Box feature. You can draw a box around any area of the Chart and then look at the data points in a magnified view.

To execute Magnification Box:

- click on a point of the Chart with the left mouse button
- while depressing the left mouse button, drag the Pointer and draw a box around the data points to be magnified
- release the left mouse button

To return to the normal view:

- depress the ESC Key

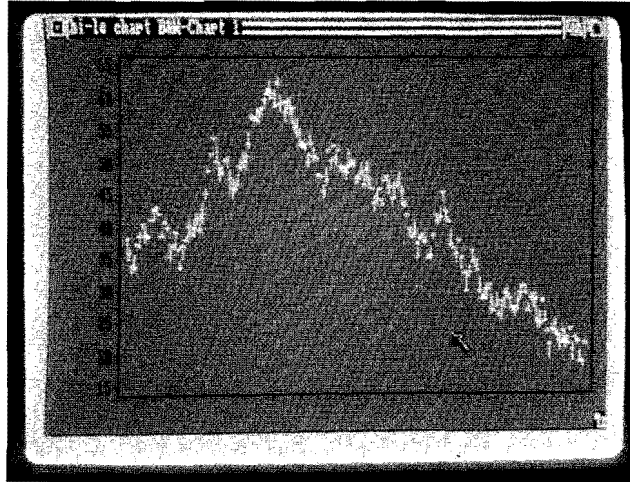
Hi-Lo Charts

Overview:

Hi-Lo charts are used primarily to depict financial data. Such as the High, Low, and Closing price of a stock. Hi-Lo charts can be used for scientific charting as well.

The data for a Hi-Lo chart is extracted from the Worksheet in a unique manner. Hi-Lo charts are typically Column oriented. When the 3 Variables options is selected, it assumes

the order of the data in the Columns is Hi, Lo, and Close. Thus the first Column is for Hi data, the second for Lo data, and the third for the Close data.



You may elect to only show two data points, that is the Hi and the Lo. If that is the case, the 3 Variables option should be turned off. You may also have to remove the Column in the Chart Specifications window as well.

Options:

- Axis
- Grid
- Ticks
- Scale
- 3 Variable
- Smart Labels

Chapter 17

LESSON TEN: AUDITING WORKSHEETS

When Worksheets get awkwardly big, MaxiPlan has some unique features to help keep track of calculations and the accuracy of data entries.

Preciseness of Worksheet analysis is dependent on the accuracy of the components of the analysis. The actual Formulas themselves can become very confusing, especially when they refer to multiple Cells. To aid the user, auditing capabilities have been incorporated in MaxiPlan. Auditing features include:

- alternatively displaying either the actual Formulas or their Values.
- attaching a Cell note to a Cell to explain the contents of the Cell. These notes may be either written, spoken, or both.
- reciting data as it is entered.
- reciting data later as a check against source documents.

In this Lesson you will learn to:

- Alternate between displaying and printing Values and Formulas
- Build Cell Notes
- Recite Data Entries

Display Formulas vs Values

To show the Formulas of a Worksheet, rather than their values, pull down the OPTIONS Menu and select the Menu Item SHOW and then select the Submenu Item FORMULAS.

Any Cell defined by a Formula will now display the Formula rather than the result of the formula, its value. If the Cell width is too small, the Columns may need to be widened to fully display the Formulas.

The dependent relationships between the Cells are readily seen when all the Formulas are displayed at once, rather than when a specific Cell is selected. To see the value for a Cell, just click on the Cell and it will be shown in the Cell Contents Display at the top left hand section of the window.

To return to the VALUE display mode, simply pull down the OPTIONS Menu, select Menu Item SHOW and Submenu Item VALUES.

Print Formulas vs Values

When the FORMULAS option is selected, the Formulas will be printed whenever the Worksheet or a Range of the Worksheet is printed. This will give you hard copy output to aid with the auditing process.

Build Cell Notes

A Cell Note can either explain the contents of a Cell, give the user step by step instructions, or convey any other appropriate information.

To see or hear a Cell Note for a particular Cell:

- select the Cell, then
- press the HELP Key

Cell Notes can be either spoken through speakers attached to the Amiga, displayed on the screen, or both. When they are displayed, a Requester appears with an OK button. When the reader is ready to proceed, they click on the OK button to close the Cell Note.

The Cell Note output is determined through the CELL NOTE OUTPUT Menu Item of the OPTIONS Menu. Under this Menu Item is a Submenu of four items:

Off

Text Only

Speech Only

Text and Speech

The default option is Text Only, or written display. To hear the Cell Note through the speakers, either Speech Only or Text and Speech have to be selected.

Below is an illustration of a Worksheet with the display of a Cell Note.



To define a Cell Note:

- click on the Cell
- pull down the COMMANDS Menu
- select the Menu Item CELL NOTE
- select the Submenu Item ADD OR CHANGE

A Requester will appear for entering in the text of the message for the Cell Note. A Cell Note can be up to 5 lines of 50 characters each for a total of 250 characters.

Once you have keyed in your message, you must click on the SAVE button to attach the message to the Cell. Clicking on CANCEL will keep the original Cell Note in tact if one is associated with the Cell.

To remove a Cell Note:

- click on the Cell
- pull down the COMMANDS Menu
- select the Menu Item CELL NOTE
- select the Submenu Item ERASE

Recite Data as Entered

MaxiPlan has the capability to recite data through the speakers as it is entered. Entries are repeated character by character. Thus 710 rather than being recited as "seven hundred ten" becomes "seven, one, zero".

To access recitation of data as entered:

- pull down the OPTIONS Menu
- select KEYBOARD ECHO Menu Item
- select ON Submenu Item

Any data keyed in will now be recited character by character including letters and special characters. For example: * is "times" and / is "divided by".

To disable reciting data, select KEYBOARD ECHO under the OPTIONS Menu and select OFF on the Submenu.

Recite Existing Data

MaxiPlan will recite aloud a Column of numbers as you compare them against the source document for accuracy. Both text and numbers can be recited. The output differs from the Keyboard Echo option. The whole word is spoken, not the individual characters. Thus 710 would be read as "seven hundred ten". To recite existing data:

- first select the Range of Data
- pull down the COMMANDS Menu
- select the READ RANGE Menu Item
- select from either the Submenu Item NO CELL NAMES or SAY CELL NAMES

You have the choice of either having the Cell Address recited before the data is recited, or MaxiPlan can skip the formalities and just recite the data. One of the two Submenu Items must be selected to execute the Read Range command.

Chapter 18

LESSON ELEVEN:

MaxiPlan UTILITIES DATA DISK

On the MaxiPlan Utilities/Data disk you will find the following directories. Not all may contain files, but are being reserved for future added information.

Database Worksheets: Sample Database Worksheets

Macro Worksheets: Sample Macrosheets

Manual Update: Contains information about MaxiPlan which evolved after the manual went to press. (Maybe on MaxiPlan Program Disk) Files in this directory are opened by clicking on the Drawer and File Icons.

Worksheets: Sample MaxiPlan Worksheet

Read Me First: Critical Information (Maybe on MaxiPlan Program Disk) Files in this directory are opened by clicking on the Drawer and File Icons.

How To: Further embellishments of items already in the manual (Maybe on MaxiPlan Program Disk)

Templates: Detailed Worksheets for solving specific business problems

Public Domain: contains two public domain Amiga programs for your convenience:

- **DIRUTIL:** for copying, displaying, printing, deleting of Amiga Disks
- **FixObject:** for fixing up files transferred via XMODEM protocol.

See the "About Public Domain" information file on the Utilities/Data Disk for an explanation concerning the two public domain programs.

Except where noted, each Drawer or Directory is accessed either by using the Project Menu and Open Worksheet command or by clicking on the Drawer icon after opening the Utilities/Data Disk on the Workbench. The Files in each Drawer can be accessed in the same manner.

MaxiPlan Utilities: Contains the following Utility programs:

- **MaxiMerge:** for outputting MaxiPlan Data Files to text files for creating mailing labels or form letters
- **From 123:** for importing Lotus 1-2-3™ files into a MaxiPlan Worksheet
- **MaxiSet:** for customizing the "sound" of the Amiga Voice
- **Spool:** a print spooler to print files in the background of another file. See "About Spool" information file on the Utilities/Data Disk for background.
- **FileConverter:** an AmigaBasic™ utility program for converting between MaxiPlan SAVE DATA AS TEXT format and other formats. Instructions are supplied in associated "README" files.

In this lesson you will learn to:

- create Mail Merge files with the MaxiMerge Utility
- import Lotus 1-2-3™ files
- adjust sound of MaxiPlan's voice with MaxiSet
- set up the Print Spooler

MaxiMerge: How to Export MaxiPlan Data for Mail Merge

A common application of database records is to merge information into a form letter or to create mail labels. A MaxiPlan database "saved as a text" file can be exported to any form letter or label template. The form letter or template itself must also be "saved as text". MaxiMerge is a utility which combines the two text files and sends the finished output to either a printer or a disk file.

The MaxiMerge utility window has three Menus available:

Project: for selecting both the Form File name and the Database File name, as well as for actually executing their merge

Form Type: for specifying either Letter or Label output

Output: for designating either a Printer or a Disk File output destination

Below is a step by step description of how to create the Form and Database text files and execute their merge.

Step 1: Create the Letter or Label Form

A Form is a letter or label which pulls information from a database and inserts it at designated spots on the letter or label. The designated spots are denoted by Field Names from the MaxiPlan Database. The Field Names from the database file have to be enclosed in a single set of angled brackets < > at the proper location in the letter or on the label. Field Names are case sensitive, i.e. FirstName does not equate to firstname.

LESSON ELEVEN:MaxiMerge: How to Export MaxiPlan Data for Mail Merge

Below is an example a typical Form Letter created by ED, TextCraft, EMACS, or other Text Editor. Note <CR> designates hard carriage returns.

<Date> <CR>

<CR>

<First Name> <Last Name> <CR>

<Street> <CR>

<City>, <ST> <Zip> <CR>

<CR>

Dear <Salutation> <Last Name>,

<CR>

Enclosed you will find literature about our new products and services. Thank you for your support. You will hear from one of our representatives in the near future. <CR>

<CR>

Best Regards,

<CR>

Adam Smith <CR>

President <CR>

The following is an example of a Form Label using labels which are six lines high:

<CR>

<First Name> <Last Name> <CR>

<Street> <CR>

<City>, <ST> <Zip> <CR>

<CR>

<CR>

Step 2: Specify the Database Merge File

Continuing the example of the above Form Letter and Form Label, we now have to specify the Database file to be merged into the above Forms.

Each Field Name will appear at the head of a Column in the Range specified as a Database in the Worksheet and the appropriate information for each record is keyed into the Rows of the Database. Thus the following would appear in the Range specified as a Database in the Worksheet.

Last Name	First Name	Salutation	Street	City	ST	Zip
Jones	Robert	Rev.	123 Main	Alta	UT	80765
Dickson	Tom	Mr.	4 Kings	Troy	NY	10090
Mason	Barbara	Ms.	16 Valley	Brea	CA	97234

This database Range would then be saved as text using the SAVE DATA AS TEXT Menu Item in the DATA Menu. This converts the database into a tabular delineated format. You will also be asked to give this Database a name which describes its contents and lets you know it is a text file, such as "Customers.text".

When a MaxiPlan text file is displayed on the screen, the first line is the Field names, and each successive line is the Row or Record of the Database. You will not be able to see the Tabs between the Fields in each Row nor Carriage Return at the end of each Row. For purposes of illustration, we have used a dot between the Fields below to designate a Tab. Note: "." is to distinguish an actual period from a Tab.

The above Database as a text file would then be:

Last Name.First Name.Salutation.Street.City.ST.Zip	<---Field Names
Jones.Robert.Rev".123 Main.Alta.UT.80765	<---First Record
Dickson.Tom.Mr".4 Kings.Troy.NY.10090	<---Second Record
Mason.Barbara.Ms".16 Valley.Brea.CA.97234	<---Third Record

Step 3: Choose Form Type and Output Destination

Before executing a merge, you must specify if the output is to be a Letter Form, i.e. with a Carriage Return between Forms, or a Label Form, i.e. without a Carriage Return between Forms.

To designate which type of Form:

- pull down the FORM TYPE Menu
- select either the LETTER or LABEL Menu Item

You must also identify if the output is to the Printer or to a Disk File before conducting the merge.

To specify the output destination:

- pull down the OUTPUT Menu
- select either the PRINTER or DISK FILE Menu Items

Step 4: Select the Database and Form Text Files

Under the Project Menu are four Menu Items. Two bring up file selection requesters for selecting the Database and Form text files, a third is for executing the Mail Merge and the last is to exit MaxiMerge. These Menu Items are shown below:

- CHOOSE FORM: to select the Form File
- CHOOSE TEXT DATABASE: to select the Database File
- GO: executes the merge of the two files
- QUIT: exits from the MaxiMerge Utility.

LESSON ELEVEN:MaxiMerge: How to Export MaxiPlan Data for Mail Merge

To select the Form File:

- pull down the Project Menu
- select CHOOSE FORM

The File Selector for Form Files will be displayed as shown below. On the right side of the Selector is the list of Disk Drives.

- click on a particular Disk Drive

Once the Disk Drive is selected,

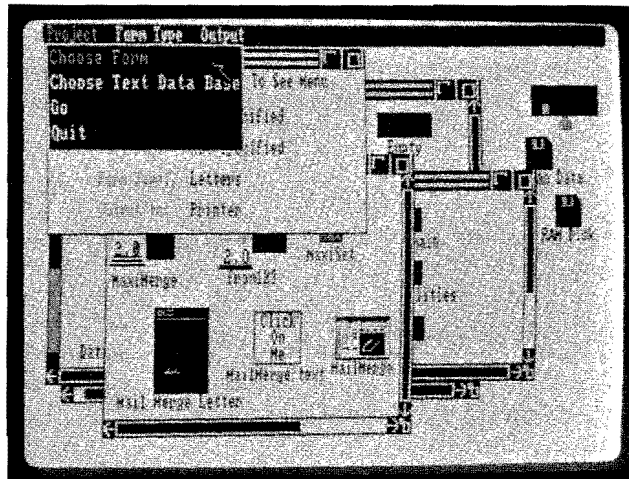
- click on the SHOW FILES button

This will bring up the display of the available files on the Disk in the selected Disk Drive. To the left of each name is a code to designate if the name is a File or a Drawer which will contain other Files. Should you wish to see the Files in another Drawer, simply click on the Drawer name. A Scroll Bar just to the right of the names is available to quickly browse through all of the file names. Once the desired file is found, click on the OK button to accept the file.

To select the Database File:

- pull down the Project Menu
- select CHOOSE TEXT DATABASE

You will be presented with the same File Selector as described for CHOOSE FORM. The Drawers and Files can be accessed as you would with any MaxiPlan File selector.



Step 5: Merge the Form File and Data File

Once the Form File and the Data File have been selected and the output destination chosen, you are ready to execute their merging.

To perform the actual merge

- pull down the PROJECT Menu in the MaxiMerge Utility window @BULLET = select GO Menu Item

The output destination is based on the selection in the OUTPUT Menu.

From 123: How to Import a Lotus 1-2-3(tm) File

The MaxiPlan Utility From 123 will convert a Lotus 1-2-3™ format file into a MaxiPlan file. You must first move the data file from a Lotus 1-2-3™ disk onto an Amiga format disk.

This can be done by a variety of methods. One of the simplest is via a modem program. You must consult the manual of your modem software for details on how to work with your software.

Other methods include 5 1/4" disk drives which can be plugged into the Amigas well as special programs which will allow conversion of MS-DOS formatted files. It is advisable to consult your Amiga salesman about the specifications for such peripherals and programs.

Note: Before you begin to import a Lotus 1-2-3™ file, it must have the extension ".WKS" in the file name. The MaxiPlan Utility From 123 requires the ".WKS" designate to recognize a Lotus 1-2-3™ file.

To Convert a Lotus File

- Double Click on the FROM 123 Icon
- Pull Down the PROJECT Menu
- Select the CONVERT A 123(tm) FILE Menu Item

This will bring up a File Selector window similar to that available under MaxiMerge. Please review the preceding discussion for details on how to use the File Selector window.

- Select the desired file, be certain it ends in ".WKS"
- Click on the OK button

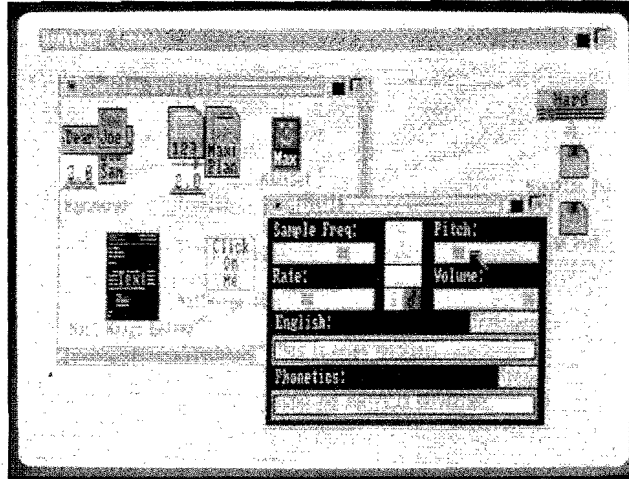
Once the file is converted, it will now end in .PLAN instead of .WKS. It will appear on the same drive as the .WKS file.

MaxiSet: How to Define MaxiPlan's Voice

After opening the MaxiSet Icon, you will be presented with the MaxiSet window. This contains all of the slide bars for adjusting the "sound" of the Amiga Voice.

The Amiga actually reads a phonetic translation of a text entry for output to the speakers. To test the Amiga Voice, you must create sample text for input. The MaxiSet window provides a box to key in the text for the test sample voice output.

- Key in your sample, such as: "This is Amiga speaking."
- Click on the button marked TRANSLATE



This will translate the English text into Phonetic Representation in the bottom box.

To hear the sample:

- Click on the SPEAK button

Now you will want to adjust the sound to your own liking with the six available variables:

Robot sounding vs Human sounding:

This is defined by the Face Icon in top center of the window. When it has two square eyes and one square for a mouth, the voice sounds more mechanical, and all words are spoken with equal emphasis. The Human Option is depicted by a face with a nose in profile as well as a line for a mouth. This option gives the voice inflection, that is some words are spoken with greater emphasis. Toggle between the two options to hear the difference.

Male vs Female voice:

The Male Voice is generally lower pitched while the Female Voice is higher pitched. This is accessed by clicking on either the Female symbol or Male symbol in the center of the window.

Sample Frequency:

This slide bar dictates the distinctiveness of the voice, how much "gravel" or extraneous noise.

Pitch:

This slide bar dictates the note range of the voice.

That is: do, re, me, fa, ...etc.

Rate:

This slide bar dictates how fast the words are spoken. That is, at 45 wpm vs 78 wpm.

Volume:

This slide bar dictates the loudness of the voice.

It is possible to display a Talking Face over the Worksheet whenever the Amiga Voice is speaking in MaxiPlan. Whenever reading Ranges or Speaking Cell Notes the Face will be displayed with moving lips at your election. To turn the display of the Face on or off, simply click on the icon above the Male or Female Symbol Icons. The Face will appear on Worksheets when the Face is shown to the right of the MaxiSet window.

How to Use the Print Spooler

The Print Spooler will automatically print files with the extension ".print". This extension must be fully spelled out and in lower case letters (case sensitive). When you execute the command PRINT on the Project Menu and the FILE Submenu Item, you will be asked to name the file and designate which disk and directory it is to be stored.

To add the file to the printing que, you must:

- end the file name with ".print"
- designate the file PATH to the same disk and directory as the Print Spooler.

Once the file is properly named and in the same disk and directory as the Print Spooler, it will be automatically printed. At one minute intervals, the Print Spooler activates itself and looks around the directory for files with the extension ".print". It then copies these files to the PRT: device just as if you had executed the CLI command "COPY file TO PRT:".

After the Print Spooler copies the files to the PRT: device, it changes the extension on the file to ".PRINTED" signifying to the user that the spooler has printed the file.

If you reach a point where there are a lot of files in the directory with the ".PRINTED" extension, you can use the utility CleanUp to automatically execute a global purge of these files.

To activate the Print Spooler:

- move the utility Print Spooler to the directory where files with the extension ".print" are located
- double click on the name Print Spooler to activate the spooler

To deactivate the Print Spooler:

- reboot the system.

Chapter 19

LESSON TWELVE:

ADVANCED SAMPLE WORKSHEETS

The Worksheets that are described in this Chapter are examples of how to integrate many of the tools described in earlier chapters in a practical application. It will not be a step by step description, but instead will concentrate on what tasks are being addressed by the worksheet, and what specific MaxiPlan tools are used to accomplish the task.

In this Lesson you will learn to:

- Integrate all of the previous 11 lessons into a series of Linked Worksheets
- Create Similar Worksheets from a Template Worksheet using the SAVE AS command
- Use Multiple Databases on one Worksheet
- Use Built-in Functions, specifically Database Functions, to efficiently extract data and simultaneously perform calculations
- Link Worksheets to transfer data from one Worksheet to another
- Create Automatic Audits within Worksheets

To view the finished Worksheets

- Insert MaxiPlan Data Disk into any drive
- Execute the Open Worksheet Command
- Select the Drive with the MaxiPlan Data Disk
- Click on the center of window to see Directories and Files
- Select MaxiWS Directory
- Select Worksheets Directory
- Select either ADVS-Template, ADVS-Jan Check Book Worksheet, ADVS-Feb Check Book Worksheet, or ADVS-March Check Book Worksheet

Task Overview

The Advance Sample Worksheets are for an Office Furniture Retail Store, but they portray principles applicable to many enterprises or individuals.

The purpose of the three Worksheets is to:

- Produce a Checkbook Register
- Disburse Checks written into Expense Accounts
- Allocate Funds deposited from Customers
- Collect Data into a Monthly Income Statement
- Print out Income Statement including Monthly Data and Year to Date Data

There is a Worksheet for each of the first three months of the year. The data from the Worksheet for the month prior is automatically transferred to the Worksheet for the next month, thus when the December Worksheet is complete, it will reflect the accumulated activity for the entire year.

Data Organization

Before the Worksheets can be created, a system for allocating expenses and distinguishing customers must be devised. To do this, we use a Chart of Accounts. For our example the following Chart of Accounts is used.

<u>Account Name</u>	<u>Account Number</u>
Cash	100
Rent	110
Phone	120
Utilities	130
Freight In	140
Freight Out	150
Advertising	160
Salaries	170
Cost of Goods - Chairs	401
Cost of Goods - Desks	402
Cost of Goods - Files	403
Sales - Chairs	501
Sales - Desks	502
Sales - Files	503
Sales - Installation	504
Taxes	700

Layout of Template

The Template Worksheet is laid out into five sections:

- Check Book Register
- Expense Register
- Sales Register
- Database Criterion
- Income Statement

The Rows of the Worksheet represent either a Check written or a Deposit. Checks are first accounted for in the Check Register section in order to keep tabs of the cash balance in the

checking account. Since checks are disbursements of funds to cover expenses, the Expense Register section allocates the checks to the various expense accounts to ultimately create the Income Statement.

Deposits are also accounted for in the Check Register section in order to keep an up-to-date account of the cash balance. The majority of deposits arise from sale of product, thus deposits are also accounted for in the Sales Register. These too are also reflected in the Income Statement.

Check Register

The Check Register spans the entire Worksheet. Beginning in Column A, the Columns devoted to the Check Register are as follows:

<u>Column</u>	<u>Column Heading</u>	<u>Purpose</u>
A	Check #	Number of Check
B	Date	Date of Check
C	Payee	Who Check is made out to
D	Amount	Amount of Check
H	Fees	Checking Account Fees
I	Deposit	Amount of Deposit
J	Source	Source of Deposit, typically the Customer's Name
O	Balance	Running Balance of Checking Account

As a running balance, the last entry in Column O indicates the current balance in the Checking Account. It is a formula which is simply, the prior balance less the amount of the current check, less any bank account fees, plus the amount of the current deposit. Specifically the formula is:

$$=O(\#-1)-D\#-H\#+I\#$$

where # is the current Row number.

For example, if the current Row is Row 5, the Balance formula is

$$=O4-D5-H5+I5$$

Since each Row represents one type of activity, for example either a Check written, a bank fee, or a Deposit; in practice the Balance formula will have an entry for the previous balance (O#-1), but only one entry for D#, H#, or I# with the other two being zero. Once the Balance Formula is created, it can be replicated down Column O with the Fill Down command. See Chapter 9, "LESSON TWO: MANIPULATING THE WORKSHEET" for an explanation on how to use the Fill Down command.

Expense Register

The checks are used to pay for the expenses of the business, or in our specific example the store. A particular check may be for one specific type of expense, i.e. Rent, or it maybe for a collection of expenses such as to pay for different inventory items. We have also included

an Automatic Audit which makes certain that the sum of the allocated expenses equals the amount of the entire check.

The Columns of the Worksheet devoted to the Expense Register are as follows:

<u>Column</u>	<u>Column Heading</u>	<u>Purpose</u>
E	Acct. #	Indicates Expense Account for Allocation
F	Amount	Indicates Amount Allocated to Expense Account
G	Audit	Keeps track of sum of allocated amounts.

The Audit Column contains a formula that automatically makes certain that the total check is properly allocated. If the sum of the allocations do not match the amount of the check, the Audit column figure is displayed in a different color. This is accomplished by the following formula:

$$= \text{SUM}(F\# : F\# + n - 1) + \text{COLOR}(G\# = D\#, 1, 4)$$

Where # is the number of the current Row, and n is the number of individual allocations of the check.

In the ADVS-Feb Check Book Worksheet is a specific example. On Row 6 of the Worksheet, is the data for Check number 2025 written on February 2nd to Jackson Distributors. The amount of the Check is shown in Cell D6. In Column E, Cells E6, E7, and E8 are shown the three different Expense Account numbers for the allocation of the check. This particular check is for the purchase of inventory. It is allocated between Accounts 401 and 402, or Cost of Goods for Chairs and Desks, and the remaining portion to Account 140, in bound freight.

The amounts are shown respectively in Column F in Cells F6:F8. These are the Cells that are summed in the first part of the Audit formula in Cell G6. The Audit formula is Cell G6 is specifically:

$$= \text{SUM}(F6:F8) + \text{COLOR}(G6 = D6, 1, 4)$$

In this example # = 6, and n = 3, thus

$$= \text{SUM}(F6:F6 + 3 - 1) + \text{COLOR}(G6 = D6, 1, 4) \text{ becomes simply}$$

$$= \text{SUM}(F6:F8) + \text{COLOR}(G6 = D6, 1, 4)$$

The Audit formula Cell G6 first sums the allocated expenses, and then the COLOR function evaluates the sum in G6 to see if it equals the amount of the check displayed in Cell D6. If they do equal, Cell G6 is displayed in color 1, if they are not equal it is displayed in color 4.

Since this Audits only Checks and all activity on the Worksheet, it is not filled down, but instead is replicated by using Copy and Paste. Each Paste of the formula is edited to reflect the variable n which changes from Check to Check. See Chapter 9, "LESSON TWO:

MANIPULATING THE WORKSHEET" for instructions on how to use the Copy and Paste commands.

Sales Register

Columns K through N are devoted to the Sales Register. These columns account for Deposits that are from Sales by first the Invoice Numbers being paid and secondly by the different types of Sales Accounts. Column N is an Audit Column. It works in the same manner as the Audit column for Expense allocation of disbursed checks. If the sum of the Sales Account allocations do not equal the amount of the Deposited Check, the results of the Audit formula are displayed in a different color.

The Sales Register Columns are respectively:

<u>Column</u>	<u>Column Heading</u>	<u>Purpose</u>
K	Invoice #	Indicates which Invoices are being paid by the Customer's check
L	Acct. #	Indicates which Sales Account the Invoice represents
M	Amount	Indicates the amount by Sales Account
N	Audit	Keeps track of sum of Sales Account Allocations compared to the Customer's Check Deposited

Database Criterion

Column P of the Worksheet is devoted to the various Database Criteria used to aggregate the data into the Income Statement. The purpose of this Column will be discussed in the section on Databases and Database Functions below.

Income Statement

The Income Statement for the Month can be found in Columns Q,R, and S. This statement first aggregates data for the month in Column R, and then adds the current month's activity to the prior month's total for the income category using the REFER function in Column S.

Databases and Database Functions

Treating certain sections of the Worksheet as Databases, and then using the built-in Database Functions allows for quick and easy gathering of data by specific qualifiers or criterion.

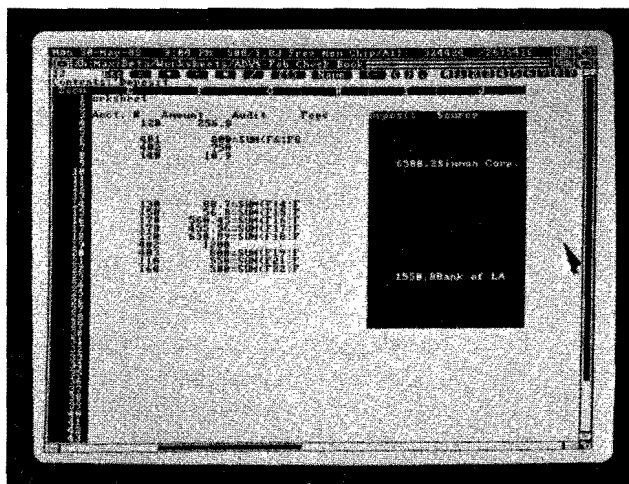
Databases

Each Worksheet has four Databases:

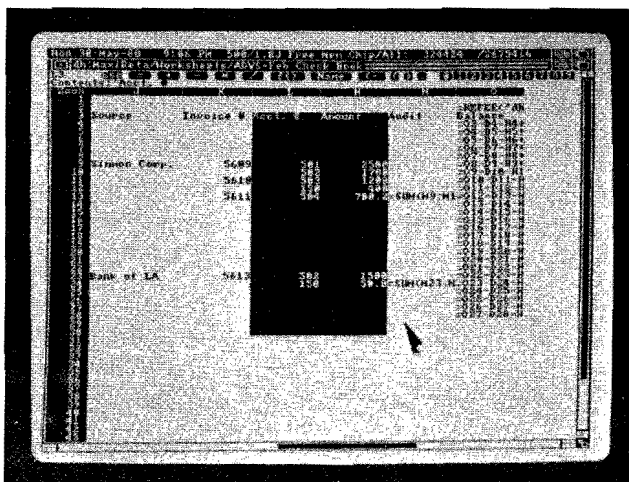
- CUSTOMERS I3:J30
- DEPOSITS L3:M30
- DISBURSE E3:F30
- VENDORS C3:D30

The following illustrations show the various Databases as shaded areas on the ADVS-Feb Check Book Worksheet:

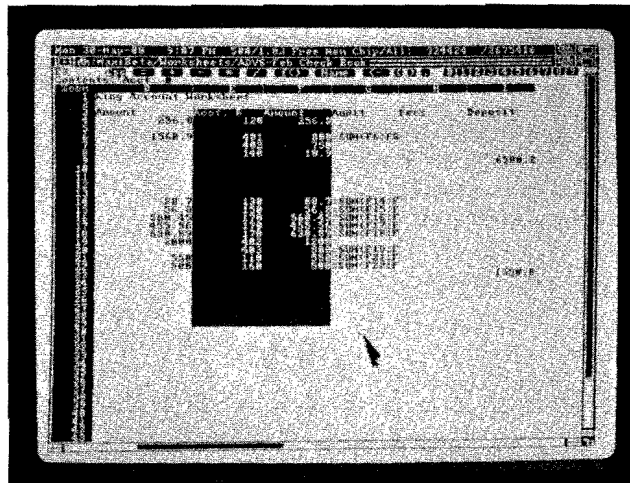
CUSTOMERS: Used to Find Sales by Customer Name



DEPOSITS: Used to Allocate Sales by Type of Sales Account



DISBURSE: Used to Allocate Payments by Expense Account



VENDORS: Used to Find Payments by Vendor Name



When you add more Rows to your Worksheets, i.e. enter additional Checks and Deposits, you will want to expand the size of your Databases. This can be done by using the MODIFY NAME command on the EDIT Menu.

To expand a Database:

- Select MODIFY NAME from the EDIT Menu

This will present the Worksheet Name Selector.

- Click on the particular Database Name to be expanded.

The Database Name will appear in the NAME data entry area, and the current Cell Address expression of the Database Named Range will appear in the INFO data entry area.

- Move the Pointer to the INFO line and simply edit the contents to change the Range to a different or larger Range of Cells

Database Criteria

The Database Criteria dictate how the Data is gathered. There are four basic activities associated with manipulating Database Data, or Records - Sorting, Finding, Extracting, and Deleting. In the case of our Advanced Sample Worksheets, we are using the Database Criterion style that is used for Finding or Extracting Data.

The Find or Extract Database Criterion consists of:

Field Name
Matching Criteria
Matching Criteria
etc.

In our example, the matching criteria is usually Account Numbers, or numeric type data. Matching Criteria for numeric data must always begin with an equal sign, followed by the condition. Specifically, to find data for both in bound and out bound freight, the Database Criterion is:

Acct. #	-- Field Name
==140	-- Must equal Account Number 140, in bound freight
==150	-- Must equal Account Number 150, out bound freight

The nine numeric data criteria are:

Criterion Name	Criteria	Cell Address	Purpose
ADV	Acct. #	P23	Field Name
	==160	P24	Must Equal Acct. 160
COSTOFGOODS	Acct. #	P7	Field Name
	==401	P8	Must Equal Acct. 401
	==402	P9	Must Equal Acct. 402
	==403	P10	Must Equal Acct. 403
FRT	Acct. #	P11	Field Name
	==140	P12	Must Equal Acct. 140
	==150	P13	Must Equal Acct. 150
PHONES	Acct. #	P19	Field Name
	==120	P20	Must Equal Acct. 120
RENT	Acct. #	P5	Field Name
	==110	P6	Must Equal Acct. 110

Criteria Name	Criteria	Cell Address	Purpose
SALARIES	Acct. #	P3	Field Name
	==170	P4	Must Equal Acct. 170
SALES	Acct. #	P14	Field Name
	==501	P15	Must Equal Acct. 501
	==502	P16	Must Equal Acct. 502
	==503	P17	Must Equal Acct. 503
	==504	P18	Must Equal Acct. 504
TAX	Acct. #	P25	Field Name
	==700	P26	Must Equal Acct. 700

Find or Extract Database Criteria for alpha data differ from numeric in one aspect, they do not begin with an equal sign and a logical condition. The two Database Criteria from the ADVS-Feb Check Book Worksheet for alpha data are as follows:

CUST	Source	P27	Field Name
	Sim*	P28	Everything beginning with "Sim"
VEND	Payee	P29	Field Name
	~ UPS	P30	Everything but UPS

The * and ~ are called "Wildcards". They allow you to apply conditional screening criteria to Find or Extract alpha type data from a Database. In the section below describing the application of Database Built-in functions, you will see how using Wildcards greatly expands the analytical abilities of MaxiPlan Databases.

Please turn to Chapter 12, "LESSON FIVE: CONVERTING MaxiPlan DATA INTO A DATABASE" for a more detailed discussion of Database Criteria.

Built-in Database Functions

Now that we have defined Databases and Database Criterion for the Template Worksheet, we are now ready to bring their power to bear on the problem of creating an Income Statement using the built-in Database function DSUM.

All Database Built-in functions use the same set of three arguments:
Database Name, Column # of Data, Database Criteria Name

- Database Name indicates which Columns contain the Data to be manipulated.
- Column # indicates which particular Column of Data is to be gathered
- Database Criteria Name indicates which Criteria is used for selecting or screening the data

Note the Column numbers for Database functions use the convention that the left most Column of the Database is 1, the next to the right is 2, etc.

Below is Column R of the ADVS-Feb Check Book Worksheet is using the FORMULA option for the SHOW Menu Item on the Worksheet OPTIONS Menu. This column utilizes a series of formulas using DSUM for aggregating the data for the month by the various categories of the Income Statement shown in Column Q.

Cells R3 and R4 represent two examples of how DSUM is used with two different Databases.

In R3, the Sales for the month are summed. The formula in this Cell is:
`=DSUM(DEPOSITS,2,SALES)`

The DEPOSITS Database is comprised of the Data in Columns L and M, which are respectively headed Acct. # and Amount. Column L contains the Sales Acct. # to indicate the type of Sale. In the our example, Chairs are indicated by Sales Acct. # 501, Desks by Sales Acct. # 502, Desks Acct. # 503, and Installation Labor by Acct. # 504. Column M contains the various amounts allocated to each Sales Acct. #.

Column number "2" indicates that the data to be manipulated is the second column of the Database, i.e. Column M or the Column containing the Amounts for each Sales Acct. #.

The SALES Database Criteria, as described above, selects data if there is a match in the Field Name "Acct. #" for either Acct. # 501, 502, 503, or 504. Column 1 of the Database is labeled "Acct. #", thus the SALES Database Criteria evaluates the entries in this Column for the appropriate matches.

Using these three arguments for the DSUM function, we can now pick certain numbers from Column M (Column 2 of the DEPOSITS Database), based on matches in Column L (as described by the SALES Database Criteria) and automatically sum the numbers (as indicated by the DSUM function). This particular DSUM function returns the Sales for the month.

Had we used the same three arguments for another Database function such as DAVERAGE, the result would be the average of the same set of numbers rather than their total or sum.

Cell R4 also has a DSUM function, but the arguments are the Database DISBURSE, Column number 2, and the Database Criteria COSTOFGOODS.

DISBURSE Database is the Columns E and F of the Worksheet. Column E is for Expense Account Numbers, and Column F is the amounts of each Check allocated to the various Expense Account Numbers. Column E, or Column 1 of the Database, is labeled "Acct. #" and Column F, or Column 2, is labeled "Amount". These labels are the Field Names as described in Chapter 12, "LESSON FIVE: CONVERTING MaxiPlan DATA INTO A DATABASE" discussing Databases.

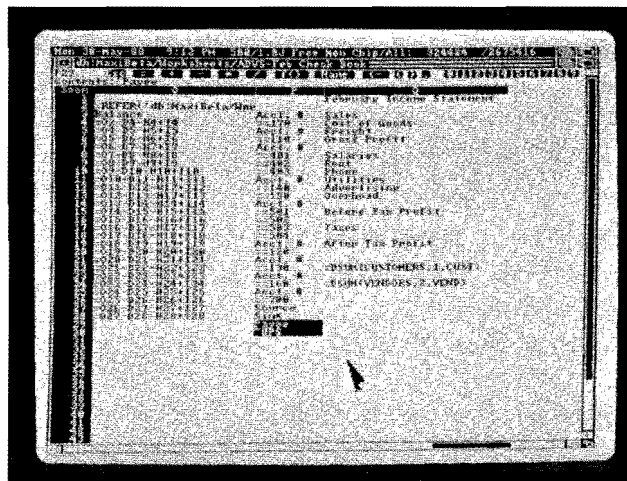
Similar to the SALES Database Criteria, COSTOFGOODS evaluates for matches for expense account numbers 401, 402, and 403.

Thus the formula in R4:
`=DSUM(DISBURSE,2,COSTOFGOODS)`

Evaluates for matches to 401, 402, or 403 in the "Acct. #" Column of the DISBURSE Database, and then sums the data found in Column 2, the amounts allocated to these account numbers. The result is the Cost of Goods sold for the month.

Using different Databases and Database Criteria with the DSUM built-in Database Function we can isolate and aggregate freight expenses, salaries, rent, phone expenses, utilities, advertising expenditures, and taxes paid. View Column R to see how DSUM is used to create the remainder of the Income Statement.

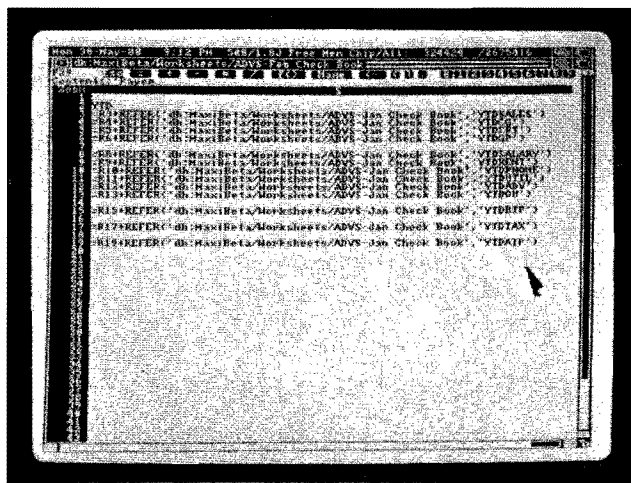
Two final examples of DSUM can be found in Cells Q22 and Q24 as shown below.



The DSUM function in Q22 is used to sum up the Sales for a particular customer, while the formula in Q24 adds up all of the disbursements to vendors excluding those to UPS. To see how changing the criteria can change the results of a DSUM function, select Cell P30, the criteria for the VEND Database criteria, and remove ~UPS and replace it with UPS. Then press F1 to recalculate the Worksheet. When the ~UPS is the criteria, Q24 is 6603.3. If the "not" wildcard "~" is removed, Q24 becomes 56.8.

Link Worksheets with the REFER Function

Data can be transferred from one Worksheet to another with the REFER Function. REFER brings in data from one Named Cell of a Worksheet into the Cell containing the REFER function in another Worksheet. See Column S of the ADVS-Feb Check Book Worksheet shown below for examples of how to use the REFER function. This Column of the Income Statement reflects account balances year-to-date. This is done by adding the current month's activities found in the adjacent Cell in Column R to a REFER function which access the data in Column S of the previous month's Worksheet. Thus the REFER functions shown on the next page are pulling in January's year-to-date figures and adding them to February's activity.



Note that it has two arguments, the Worksheet Pathname for the Worksheet with the Named Cell, and the Name of the Cell itself. Each is surrounded by quotes. The Pathname takes the usual Amiga Pathname format:

Disk Name:Drawer Name/File Name

To Name a Range of Cells or just one Cell:

- select the Range of Cells or the single Cell
- pull down the EDIT Menu
- select the Menu Item DEFINE NAME

Key in a Name for the Range in the Requester.

- accept the name by clicking on the OK Button

The Named Ranges for the REFER function of the Template are respectively:

<u>Range Name</u>	<u>Cell Address</u>	<u>Data</u>
YTDSALES	S3	Year-to-Date Sales
YTDCG	S4	Year-to-Date Cost of Goods
YTDFRT	S5	Year-to-Date Freight
YTDGP	S6	Year-to-Date Gross Profit
YTDSALARY	S8	Year-to-Date Salaries
YTDRENT	S9	Year-to-Date Rent
YTDPHONE	S10	Year-to-Date Phone
YTDUTIL	S11	Year-to-Date Utilities
YTDADV	S12	Year-to-Date Advertising
YTDH	S13	Year-to-Date Over Head
YTDPT	S15	Year-to-Date Before Tax Profit
YTD TAX	S17	Year-to-Date Tax
YTDATP	S19	Year-to-Date After Tax Profit

The final REFER function pulls in the last month's ending balance in the checking account. It is found in Cell O2 of the Template Worksheet.

For more detail about the REFER function, please turn to Chapter 14, "LESSON SEVEN: PULLING DATA FROM OTHER WORKSHEETS".

Duplicating the Template Worksheet

Now that you have reviewed the creation of the Template Worksheet, we can use it to make our monthly Check Book Worksheets. We will use the SAVE AS command on the PROJECT Menu to create subsequent Worksheets.

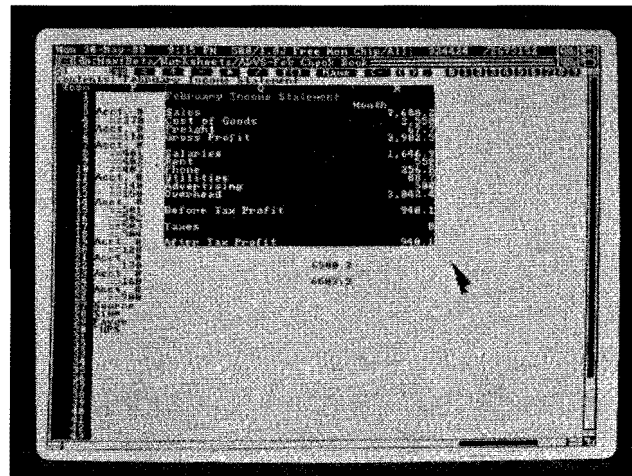
To make an April Worksheet:

- while still in the Template Worksheet, pull down the PROJECT Menu
- select the SAVE AS Menu Item
- key in: ADVS-April Check Book
- hit Return Key or click on OK Button

This will create a duplicate of the ADVS-Template Worksheet under the name ADVS-April Check Book.

Now you will have to edit the Cells that use the REFER function. All of the Template REFER functions use the ADVS-Jan Check Book in the Pathname, we want to change them to ADVS-March Check Book. When the May version of the Template is created, the REFER functions will have their Pathname file names changed to ADVS-April Check Book. This process is repeated each month through the remainder of the year.

Now you are ready to key in the checks and deposits. The Databases have been created assuming the last Record, or Row occurs in Row 30. Should you need to enlarge a Database, use the MODIFY NAME Menu Item on the EDIT Menu.



Chapter 20

FUNCTION REFERENCE

Many of the built-in Functions use either a list of numbers, a list of Cell Addresses, or a Range of Cells in their argument. For the sake of clarity, a List will be defined to be:

- Numbers separated by commas (3,6,8)
- Cell Addresses separated by commas (A2,A4,A6)
- Range of Cells separated by colon (B3:B7)
- Named Range (SALES)
- or any combination of the above.

Types of Functions

There are 9 types of Functions including:

- Statistical
- Financial
- Logical
- Database
- Mathematical
- Trigonometric
- Index
- Date
- Special

In this section of the manual Functions are listed alphabetically within their Function Type. To see a list of all the Functions alphabetically, please turn the Index and the entry Function. Under this Index item each Function has been listed alphabetically. In addition, the File "Built-In Functions" in the Worksheets Drawer in the Utilities/Data Disk, lists all of the example functions listed below for your review as well.

Statistical Functions

MaxiPlan Statistical Functions calculate statistics on a list of entries. These may either be a Range in a Worksheet or an actual list of numbers in the Statistical Function argument.

AVERAGE

Argument: List

Returns: Numerical average (i.e. arithmetic sum of all inputs divided by the number of inputs)

Examples:

AVERAGE(2,4,5)

Returns: 3.67

AVERAGE(B3:B5,8,10)

Returns: Sum of B3 + B4 + B5 + 8 + 10 divided by 5, or 7.8

AVERAGE(SALES)

Returns: Sum of the Cells in the Named Range SALES divided by the number of Cells in the Range

COUNT

Argument: List

Returns: Number of items in the argument with Values including text or the Value 0

Examples:

COUNT(2,4,5)

Returns: 3

COUNT(B3:C5)

Returns: 6 if all 6 Cells of the Range contain Values. On the Worksheet return 3 since Cells C3:C5 are blank.

COUNT(SALES)

Returns: 44

MAX

Argument: List

Returns: Largest Value in Argument

Examples:

MAX(2,4,5)

Returns: 5

MAX(B2:C19)

Returns: Largest value in Range B2 to C19, or 5972.9

MAX(SALES)

Returns: Largest value in the Named Range Sales, or 24440

MAX(8,9,SALES)

Returns: Largest value in the Named Range Sales or of the numbers 8 and 9, or 24440

MIN

Argument: List

Returns: Smallest Value in Argument

Examples:

MIN(2,4,5)

Returns: 2

MIN(B2:C9)

Returns: Smallest value in the Range B2 to C19

MIN(SALES)

Returns: Smallest value in the Named Range Sales, or 25

STDEV

Argument: List

Returns: Square root of the Variance of the List

Examples:

STDEV(1.89,10,2.70,0.05)

Returns: 3.7842502

STDEV(GRADES)

Returns: Standard Deviation of the named Range Grades, or 18.84

STDEV(45,78,56,68,34,89)

Returns: 18.84

STDEV(G1:G6)

Returns: 18.84

VAR

Argument: List

Returns: The population variance.

Examples:

VAR(1.89,10,2.7,0.05)

Returns: 14.32055

VAR(GRADES)

Returns: Variance of the Named Range Grades, or 354.89

VAR(45,78,56,68,34,89)

Returns: 354.89

VAR(G1:G6)

Returns: 354.89

Financial Functions

Max!Plan Financial Functions evaluate investments using variables such as interest rate, term of the investment, number of periods for compounding interest or payments, and the amount of payments. Often the stream of payments for an investment are entries into a Range on the Worksheet, thus a Range is often incorporated into the Financial Function argument.

FV

Argument: Expression for Payment, Expression for Interest Rate per Payment Period, Expression for number of payments

Returns: Future value of an equal stream of payments at a specified period interest rate for a specified number of payments

Examples:

FV(1000,,10,12)

Returns: 21384.283

FV(PAYMENTS,.0079,48)

Returns: Future value of stream of payments defined by Named Range PAYMENTS at an annual interest of 9.5% divided by 12 or .79% monthly for 48 monthly payments, or 14523.41

FV(250,INTEREST2,4)

Returns: 4641

FV(G19,.10,4)

Returns: 1160.25

FV(250,G24,4)

Returns: 1160.25

FV(250,.10,4)

Returns: 1160.25

IRR

Argument: Expression for guess, Range reference

Returns: Approximate internal rate of return for a series of cash flow data entries in the referenced range. The referenced range must be a single column or row. Expression for guess is your initial estimate of the IRR. Since IRR is an interactive function, it will return ERR if convergence does not occur within 20 iterations to within .000001. If there is a change in the sign of the cash flow stream from an out flow to an in flow and back to an out

flow, the IRR function can return multiple values. A normal guess would be between 0 and 1.0

Examples:

IRR(.15,INVESTMENT)

Returns: IRR for Named Range INVESTMENT, or 0.17

IRR(.10,G1:G6)

Returns: NA, since G1 to G6 do not converge to a value

IRR(.15,G31:L31)

Returns: 0.17

IRR(.15,-16000,5000,5000,5000,5000)

Returns: 0.17

NPV

Argument: Expression for discount rate, Range reference

Returns: Net Present Value of a stream of unequal future cash flows discounted by an interest cost of money factor. The interest rate is the applied at the beginning of the period. The range must be a single Column or Row.

Examples:

NPV(.105,INVESTMENT)

Returns: 2456.37

NPV(0.105,G31:L31)

Returns: The sum of the discounted net present value for every Cell in the Range G31 to L31 brought back to beginning of the first payment. In our example, this is an annual interest rate of 10.5% for 5 annual payments in Cells G31 to L31, or 2456.37

NPV(.105,-16000,5000,5000,5000,5000)

Returns: 2456.37

PMT

Argument: Expression for Principal, Expression for Interest for Payment Period, Expression for Number of Periods

Returns: The payment due at the beginning of each period to cover the repayment of the principal borrowed at the specified period interest rate for the loan

Examples:

PMT(10000,0.01,12)

Returns: 222.49, the loan payment to repay a 10,000 loan at 12% annual interest divided by 12 = 1% or 0.01 in decimal monthly interest over 60 monthly payments (60/12=5 years for repayment)

PMT(PRINCIPAL,.0079,12)

Returns: 876.74, the loan payment to repay a 10,000 loan shown in the Named Range PRINCIPAL, at a 9.5% annual interest divided by 12 or .79% (or .0079 in decimal) monthly period interest, over 12 monthly payments ($12/12 = 1$ year for repayment)

PMT(G43,.0375,12)

Returns: 1050.12, the loan payment to repay a 10,000 loan shown in Cell G43, at 15% annual interest divided by 4, or 3.75% (.0375 in decimal) quarterly interest, over 12 quarterly payments ($12/4 = 3$ years for repayment)

PMT(10000,INTEREST,2)

Returns: 5761.90, the loan payment to repay a 10,000 loan, at 20% annual interest divided by 2, or 10% (.10 in decimal) semi-annual interest, over 2 semi-annual payments ($2/2 = 1$ year for repayment)

PV

Argument: Expression for Payment, Expression for Period Interest, Expression for Number of Periods

Returns: Present value of an equal stream of payments, or an annuity, discounted by the specified period interest rate, over a specified payment period

Examples:

PV(1000,0.0067,60)

Returns: 49271.90, the present value of a 1,000 monthly payment over 60 months at 8% annual interest divided by 12, or .67% (.0067 in decimal) is the monthly period interest rate

PV(PAYMENTS,INTEREST,6)

Returns: 1088.82, the present value of a 250 semi-annual payment over 6 semi-annual payments ($6/2 = 3$ years for repayment) at 20% annual interest divided by 2, or 10% (.10 in decimal) semi-annual period interest rate

PV(G43,H43,6)

Returns: 43552.61, the present value of a 10,000 semi-annual payment over 6 semi-annual payments ($6/2 = 3$ years for repayment) at 20% annual interest divided by 2, or 10% (.10 in decimal) semi-annual period interest rate

Logical Functions

Typically Logical Functions return a value of either 1 for TRUE or 0 for FALSE. However, some Logical Functions merely test for a type of data in a Cell. Among the Cell Type Test Functions is: ISERR and ISNA.

ISERR

Argument: Cell Reference

Returns: 1 if the Cell Value is an Error. 0 if the Cell Value in anything but an Error.

Examples:

If Cell G51 contains ERROR, Cell C47 contains a valid value, and Cell D51 is Blank. Then

ISERR(G51)	Returns: 1
ISERR(C47)	Returns: 0
ISERR(D51)	Returns: 0

ISNA

Argument: Cell Reference

Returns: 1 if the Cell Value is NA or Blank. 0 if the Cell Value is anything but NA or a Blank.

Examples:

If Cell C57 contains NA, Cell D40 contains a Blank, and Cell C38 contains a valid value. Then

ISNA(C57)	Returns: 1
ISNA(D51)	Returns: 1
ISNA(C38)	Returns: 0

The next set of Logical Functions assign a Cell Type or Logic Value to a Cell.

ERR

Argument: None

Returns: Assigns the Value Error to a Cell

Example:

ERR

Returns: Error

FALSE

Argument: No Argument required

Returns: Assigns the Value False to a Cell, or 0.

Normally used with other functions such as CHOOSE.

Examples:

FALSE

Returns: 0

CHOOSE(G8,FALSE,TRUE)

Returns: 0, since G8 has the value 0, and CHOOSE counts the first item in its list as 0. See the section on Index Functions below for further details on the CHOOSE function.

NA

Argument: None

Returns: Assigns the Value NA to a Cell.

Example:

NA

Returns: NA

TRUE

Argument: No argument required

Returns: Assigns the value True to a Cell, or 1.

Normally used with another function such as IF.

Examples:

TRUE

Returns: 1

IF(G43 < 15000,TRUE,G4)

Returns: 1, since G43 contains the value 10000, thus IF returns the second argument or the TRUE function and it returns the value 1. See the section on Logical Functions below for a further explanation on the IF function.

Logical Expression Functions

The last set of Logical Functions make comparisons and test a statement for validity or truth.

AND

Argument: expression, expression,expression, etc.

Returns: 0 if any element of an expression evaluates to 0. If all the expressions listed evaluate to non-zero, then AND returns 1.

Examples:

AND(7,6,8,5)

Returns: 1, since none of the numbers in the list is zero

AND(C45,C46,C47)

Returns: 1, since none of the Cells in the list contain a zero

AND(C44:C47)

Returns: 1, since none of the Cells in the Range contain a zero

AND(ZEROINRANGE)

Returns: 0, since one of the Cells in the Named Range contains a zero

AND(NOZERO)

Returns: 1, since none of the Cells in the Name Range contains a zero, even though one of the Cells is blank, blanks are not consider a zero

AND(G1 > 50,G1 > 20)

Returns: 0, since the contents of G1 is 45, and thus not both greater than 50 and greater than 20

AND(G1 < 50,G1 > 20)

Returns: 0, since the contents of G1 is 45, and thus both less than 50 and greater than 20

IF

Argument: comparison expression, true expression, false expression

Returns: Based on the results of the comparison, if the comparison statement is true, then MaxiPlan evaluates the true expression and returns that value. If the comparison is not true, i.e. False, then the false expression is evaluated and that value is returned.

Examples:

IF(G43 < 15000,4,5)

Returns: 4, since the contents of G43 is 10000 and thus the comparison expression is true, so the result of the true expression is returned.

IF(G43 < 15000,TRUE,FALSE)

Returns: 1, since the contents of G43 is 10000 and thus the comparison expression is true, so the result of the true expression is returned.

IF(G43 > 15000,G43 + 200,G43 + 50)

Returns: 10050, since the contests of G43 is 10000 and thus the comparison expression is false, so the result of the false expression is returned.

This can also be used in a compound expression as follows:

IF(G43 < > 10000,G1,IF(G2 < 100,3,6))

Returns: 3, since the contents of G43 is 10000 and thus the comparison expression is false, so the result of the false expression, the second IF function is returned. The result of the second IF is 3, since the contents of G2 is 56 and thus less than 100, the true expression 3 is returned.

IF(AND(G1 < 100,G2 > 50),20,10)

Returns: 20, since both expressions of the AND function are true since the contents of G1 is 45 and thus less than 100 and the contents of G2 is 78 and thus greater than 50, the results of the true expression (20) is returned.

IF(OR(G1 > 100,G2 > 50),20,10)

Returns: 20, since one of the expressions of the OR function is true, the results of the true expression (20) is returned.

NOT

Argument: Expression

Returns: The logical negation of the expression. Returns 0 if expression evaluates non-zero and returns 1 if the expression evaluates to zero.

Examples:

NOT(G70)

Returns: 0, since the contents of G70 is 40 and thus non-zero

NOT(G71)

Returns: 1, since the contents of G71 is a blank, and thus considered a zero

NOT(G1 > 100, G2 > 50)

Returns: 1, since the contents of G1 is 45 thus not greater than 100 and G2 is 78 and thus greater than 50, thus since one of the expressions is false and thus returns zero, the NOT function returns 1

NOT(G1 < 100, G2 > 50)

Returns: 0, since the contents of G1 is 45 thus less than 100 and G2 is 78 and thus greater than 50, thus since both of the expressions are true and thus returns one a non-zero, the NOT function returns 0

OR

Argument: List

Returns: If all items in the list are 0, OR returns 0. If any item in the list is non-zero, OR returns 1.

Examples:

OR(0,0,1,0,0,0)

Returns: 1, since not all of the list is of zero value

OR(G3, NOZERO)

Returns: 1, since G3 is non-zero and the Named Range NOZERO is non-zero

OR(G3, ZEROINRANGE)

Returns: 1, since G3 is non-zero and the Named Range ZEROINRANGE has non-zero values

OR(ALLZEROES)

Returns: 0, since all of the values in the Named Range ALLZEROES are zero

OR(G1 < 50, G1 > 20)

Returns: 1, since the contents of G1 is 45 and thus G1 is greater than 20 and thus OR has one true expression

OR(G1 > 50, G1 < 20)

Returns: 0, since the contents of G1 is 45, and thus G1 is not less than 20 and also it is not greater than 50, thus none of the expressions for the OR function are true

Database Functions

The following functions are statistical functions which operate on a specified database range in the worksheet. They operate very similarly to regular statistical functions except rather than using all the data in a Row, Column or Range of Cells, a selection of data cells can be acted upon based on certain criteria. The criteria used must be described in a Database Criteria Range. Thus before any of the database functions can be used, both a Database Range and a Database Criteria Range must be named.

- Each Database Function uses three types of arguments:
- Database Range - the Name of the specified Database Range
- Offset - the number of Columns or fields to the right of the left most column (field) to find the column or field upon which to perform the calculation dictated by the function
- Database Criteria Range - the Name of the Range describing the criteria for choosing which data to be included in the calculation

The following is a simple Database Range which is used in the following examples of the Database Functions. The name of the Database Range is SALES.

Database Range Named SALES

CITY	ST	UNITS	REVENUE
Atlanta	GA	235	12,980
Mobile	AL	45	4,560
Chattanooga	TN	360	20,230
Pensicola	FL	89	9,250
Jackson	MS	56	6,790
Miami	FL	450	24,440
Savanna	GA	25	3,150
Birmingham	AL	268	14,800
Melbourne	FL	189	11,760
Jacksonville	FL	101	9,680

Criteria Range Named FLORIDA

ST	- Column
FL	- Matching Find Criteria

DAVERAGE

Average for Items Matching Database Criteria

Argument: Database Range Name, Column number from left, Database Criteria Range Name

Returns: The average of entries in a Column or Field of a Database for Records matching a specified Criteria. This is the numerical sum of the entries in the Column for matching Records divided by the number of matching Records.

Example:

DAVERAGE(Sales,3,Florida)

Returns: 207.25, the average number of units for sales transactions in the state of Florida where the cost of the sale is in the third column of the Database called SALES and the Find Criteria Range is called FLORIDA.

DCOUNT

Number of Items Matching Database Criteria

Argument: Database Range Name, Column number from left, Database Criteria Range Name

Returns: The number of entries in a Column or Field of a Database for Records matching a specified Criteria. This will count the number of entries in the Column for matching Records.

Example:

DCOUNT(Sales,2,Florida)

Returns: 4, the number of items in the SALES Database for Records matching the Criteria specified in the FLORIDA Database Criteria, with entries in the second Column of the Database named SALES.

DMAX

Largest Entry among Items Matching Database Criteria

Argument: Database Range Name, Column number from left, Database Criteria Range Name

Returns: Largest value for entries in the Column indicated for Records in the Database matching the specified Criteria

Example:

DMAX(Sales,3,Florida)

Returns: 450, the highest value in the third Column of the Database SALES for the criteria FLORIDA.

DMIN

Lowest Entry Among Items Matching Database Criteria

Argument: Database Range Name, Column number from left, Database Criteria Range Name

Returns: Smallest value for entries in the Column indicated for Records in the Database matching the specified Criteria

Example:

DMIN(Sales,3,Florida)

Returns: 89, the smallest value in the third Column of the Database SALES for the Database Criteria FLORIDA.

DSTDEV

Standard Deviation for Entries in a Specified Column or Fields Matching a Certain Criteria

Argument: Database Range Name, Column number from left, Database Criteria Range Name

Returns: The standard deviation for the entries in the specified column of the Database for Records matching the specified Criteria

Example:

DSTDEV(Sales,3,Florida)

Returns: 145.37, the standard deviation for the entries in the third Column of the Database SALES for Records matching the Criteria described in the Criteria Range FLORIDA.

DSUM

Sum of Entries in Field of Database for Records Matching Specified Criteria

Argument: Database Range Name, Column number from left, Database Criteria Range Name

Returns: For Records matching a specified Criteria, the summarization of the entries in a specified Column or Field.

Example:

DSUM(Sales,3,Florida)

Returns: 829, the sum of the entries in Column three of the Database SALES for Records matching the criteria described in the Criteria Range FLORIDA.

DVAR

Variance of Entries in Field of Database for Records Matching Specified Criteria

Argument: Database Range Name, Column number from left, Database Criteria Range Name

Returns: Statistical variance for entries in a specified Field for Records matching a Criteria.

Example:

DVAR(Sales,3,Florida)

Returns: 21133.19, the variance for the third Column for the Database SALES for Records matching the Criteria FLORIDA.

Mathematical Functions

Mathematical Functions use numeric data in their arguments and return numeric data.

ABS

Absolute Number

Argument: List

Returns: The absolute value of the expression. If input is positive then returns the input. If input is negative, returns the value as a positive.

Examples:

ABS(-20)

Returns: 20, the positive value of 20

ABS(NEGINTEREST)

Returns: 0.1, the positive value of the one Cell Named Range, NEGINTEREST

ABS(H43)

Returns: 0.1, the positive value of the contents of Cell H43

EXP

Exponent

Argument: Expression with a numeric result.

Returns: e raised to the power defined by the expression, where $e = 2.7182818285$

Examples:

EXP(3.5)

Returns: 33.12

EXP(-3.5)

Returns: 0.0302

EXP(INTEREST)

Returns: 1.11, where the contents of the one Cell Named Range INTEREST is 0.1

EXP(H43)

Returns: 1.11, where the contents of the Cell H43 is 0.1

INT

Integer

Argument: Expression with a numeric result

Returns: The integer part of the express to the left of the decimal point of the results of the expression. If the expression is negative and not a whole number, the returned value is the next integer less than the expression.

Examples:

INT(8.3)

Returns: 8

INT(-8.3)

Returns: -9

INT(PRINCIPAL)

Returns: 10000

INT(G43)

Returns: 10000

LN

Natural Log

Argument: Expression with a numeric result

Returns: Natural logarithm of the expression. The expression must have a positive result. LN is the inverse of EXP.

Examples:

LN(2.7182818)

Returns: 1, the log of e

LN(7.9)

Returns: 2.07

LN(-7.9)

Returns: Error

LN(PRINCIPAL)

Returns: 9.21

LN(G43)

Returns: 9.21

LOG10

Log Base 10

Argument: Expression with a numeric result

Returns: Base 10 logarithm of the expression. The expression must be positive.

Examples:

LOG10(100)

Returns: 2

LOG10(-7.9)

Returns: Error

LOG10(7.9)

Returns: 0.9

LOG10(PRINCIPAL)

Returns: 4

LOG10(G43)

Returns: 4

MOD

Modulus

Argument: Expression for numerator, Expression for denominator

Returns: Remainder from division of numerator by denominator.

Examples:

MOD(3,2)

Returns: 1

MOD(15,8)

Returns: 7

MOD(PRINCIPAL/68)

Returns: 147.06

MOD(G43/68)

Returns: 147.06

RAND

Random

Argument: No argument required

Returns: A pseudo random number between 0.0 and 1.0

Examples: Can be used as part of a modeling.

RAND

Returns: A random number between 0 and 1.0.

RAND*10

Returns: A random number between 0 and 10

$RAND*(10)$

Returns: A random number between -10 and 0

$RAND + PRINCIPAL$

Returns: The contents of the one Cell Named Range PRINCIPAL, or 10000, plus a random number between 0 and 1.0

$(RAND*100) + G43$

Returns: The contents of the Cell G43, or 10000, plus a random number between 0 and 100

ROUND

Rounding off of number

Argument: Expression with numeric result, number of digits precision

Returns: The expression rounded to the specified number of digits or decimals. The second argument must be a whole number within the range -15 to 15. If the number in the second argument is 0, then only the integer of the numeric expression is the result. If the number is -1, then the result is a number rounded to the nearest 10, -2 the nearest 100, etc.

Examples:

$ROUND(144.5346,2)$

Returns: 144.53

$ROUND(142123.255,1)$

Returns: 142123.3

$ROUND(56734.5,-2)$

Returns: 56700

$ROUND(PRINCIPAL/3,1)$

Returns: 3333.3

$ROUND(PRINCIPAL/3,2)$

Returns: 3333.33

$ROUND(PRINCIPAL/3,-2)$

Returns: 3300

$ROUND(RAND*20,1)$

Returns: A random number between 0 and 1.0

SIGN

Argument: Expression with numeric result.

Returns: 1.0 if the expression is positive and -1.0 if the expression is negative.

Examples:

SIGN(3.5)

Returns: 1

SIGN(-3.5)

Returns: -1

SIGN(0)

Returns: 1

SIGN(PRINCIPAL)

Returns: 1

SIGN(G43)

Returns: 1

SQRT

Square Root

Argument: Expression with numeric result

Returns: Square root of the expression.

Examples:

SQRT(2.0)

Returns: 1.41

SQRT(25)

Returns: 5

SQRT(PRINCIPAL)

Returns: 100, the square root of 10000, the contents of the one Cell Named Range PRINCIPAL

SQRT(G43)

Returns: 100, the square root of 10000, the contents of the one Cell Named Range PRINCIPAL

SUM

Sum Total

Argument: List

Returns: The sum total or addition of the data specified in the list.

Examples:

SUM(5,6,7)

Returns: 18

SUM(-5,6,7)

Returns: 8

SUM(H144:J144)

Returns: 35

SUM(H144 + J144)

Returns: 5

SUM(GRADES)

Returns: 370

SUM(G1,G2:G6)

Returns: 370

Trigonometric Functions

Trigonometric Functions perform calculations on angles. The argument of a Trigonometric Function must be an expression which results in numbers of radians of an angle. To convert degrees into radians you multiply the number of degrees by $\pi/180$.

There are four categories of angles, or quadrants. The quadrants are defined by their position about the x-y axis as shown below.

IV	I
III	II

	Range in Degrees	Range in Radians
Quadrant I:	0 to 90	0 to 1.5707963
Quadrant II:	90 to 180	1.5707963 to 3.14159
Quadrant III:	180 to -90	3.14159 to -1.5707963
Quadrant IV:	-90 to 0	-1.5707963 to 0

ACOS

Arc Cosine

Argument: Cosine of the angle in radians. Input is the range -1 to 1.

Returns: The Arc Cosine of the Cosine, or the opposite of the Cosine of the angle. Output range is 0 to π .

Examples:

ACOS(COS(3.1))

Returns: 3.1

ACOS(INTEREST)

Returns: 1.47, the Arc Cosine of 0.1, the contents of the one Cell Named Range INTEREST

ACOS(H43)

Returns: 1.47, the Arc Cosine of 0.1, the contents of the Cell H43

ACOS(0.26750)

Returns: 1.3

ASIN

Arc Sine

Argument: Sine of the angle in radians. Input range is -1 to 1.

Returns: The Arc Sine of the Sine, or the opposite of the Sine of the angle. Output range is $-\pi/2$ to $\pi/2$.

Examples:

ASIN(SIN(1.3))

Returns: 1.3

ASIN(INTEREST)

Returns: 0.10

ASIN(H43)

Returns: 0.10

ATAN

Arc Tangent

Argument: Tangent of the angle in radians. Input range is any number.

Returns: Arc Tangent of the tangent of the angle in the argument, or the opposite of the Tangent of the angle. Result is always greater than $\pi/2$ and less than $\pi/2$.

Examples:

ATAN(1)

Returns: 0.79

ATAN(TAN(3.141/2))

Returns: 1.57

ATAN(INTEREST)

Returns: 0.10

ATAN(H43)

Returns: 0.10

ATAN2

Arc Tangent Squared

Argument: Expression x, Expression y. Input range is any number.

Returns: The angle whose tangent is y/x expressed in radians. Output range is -PI to PI.

Examples:

<u>When x is</u>	<u>When y is</u>	<u>ATAN2(x,y)Returns</u>	<u>Quadrant</u>
positive	positive	0 to PI/2	I
negative	positive	PI/2 to PI	II
negative	negative	-PI to -PI/2	III
positive	negative	-PI/2 to 0	IV

ATAN2(4,5)

Returns: 0.8961

ATAN2(INTEREST,4)

Returns: Arc Tan of 4 divided by 0.1, the contents of the one Cell Named Range INTEREST

ATAN2(5,H43)

Returns: Arc Tan of the contents of the Cell H43 divided by 5

COS

Cosine

Argument: Angle expressed in radians

Returns: Cosine of the angle expressed in radians

Examples:

COS(3.2)

Returns: -0.9983

COS(INTEREST)

Returns: 0.9950, Cosine of 0.1, the contents of the one Cell Named Range INTEREST

COS(H43)

Returns: 0.9950, Cosine of 0.1, the contents of the Cell H43

PI

Pi (π)

Argument: None

Returns: 3.141592654

Example:

PI

Returns: 3.141592654

SIN

Sine

Argument: Angle expressed in radians

Returns: Sine of the angle expressed in radians

Examples:

SIN(1.41)

Returns: 0.99

SIN(INTEREST)

Returns: 0.0998, the Sine of 0.1 the contents of the one Cell Named Range INTEREST

SIN(H43)

Returns: 0.0998, Sine of 0.1 the contents of the Cell H43

TAN

Tangent

Argument: Angle expressed in radians

Returns: Tangent of the angle expressed in radians

Examples:

TAN(1.324)

Returns: 3.97

TAN(INTEREST)

Returns: 0.10, the Tangent of 0.1 the contents of the one Cell Named Range INTEREST

SIN(H43)

Returns: 0.10, the Tangent of 0.1 the contents of the Cell H43

Index Functions

Index Functions perform calculations for referring to Cells indirectly.

CELL

Returns the value in the Cell a specified number of Rows and Columns from the Cell with the CELL function as its contents. When it refers to a Cell with text or a blank, it returns 0.

Argument: Column Offset, Row Offset

Returns: Cell value a specified number of Columns and Rows from Cell with the CELL function

Examples:

CELL(0,-3)

Returns: 3.97, the value in same Column and up three Rows

CELL(1,-2)

Returns: 0, since the referenced Cell contains a Blank

CELL(-1,-4)

Returns: 0, since the referenced Cell contains a text string

CHOOSE

Selects an Item from a List

Argument: List Offset, List

Returns: The value in a List of numbers, Cell Addresses, or numeric expressions that is the number of entries to the right specified by the Offset value. The first item in the list is numbered 0, the second is 1, etc. Offset can be any number between 0 and n. If the List Offset is greater than the number of items in the List, then an ERROR is returned.

Examples:

CHOOSE(1,4,5,6,7)

Returns: 5, since 5 is the second number to the right in the list of numbers in the argument for CHOOSE

CHOOSE(D176,FALSE,TRUE)

Returns: 0, since the value in D176 IS 0, the first expression in the list is evaluated and it returns 0, the value of the FALSE function

CHOOSE(6,G1,G2,G3,G4,G5,G6)

Returns: ERROR, since the offset 6 calls for evaluating the seventh item in the and there are only six items.

HLOOKUP

Horizontal or Row lookup in a Range

Argument: Expression on Index Row, Range, Row Offset

Returns: Contents of a Cell located in Column defined by the expression on the Index Row of the Range and the number of Rows Offset. The first Row of the Range is the Index Row. This Row must be in ascending order and is used to determine the Column to lookup data. The expression locates the Column for the lookup by finding an entry in the Index Row which is the biggest or greatest item less than or equal to the result of the expression. Once a Column is selected, it then finds the Row determined by the Row Offset where the first Row is counted as a 0 Offset, second Row as a 1 Offset, etc. If the offset is an expression, it evaluated and the offset is the integer value of the results of the evaluation of the expression.

If the Offset is positive: HLOOKUP finds a Row further down the Range

If the Offset is negative: HLOOKUP returns an ERROR

If the Offset is 0: HLOOKUP returns a value in the Index Row

Examples: The following Range has been named ATTENDANCE and is defined by the Cells (H179:M183)

	H	I	J	K	L	M	
179		Year	1975	1980	1984	1985	1986
180							
181		Painting	42	35	53	40	20
182		Swimming	26	41	51	37	17
183		Tennis	15	22	36	25	27

HLOOKUP(1980,ATTENDANCE,C172)

Returns: 41, since the integer of the value of the contents of Cell C172 is 3 and thus HLOOKUP returns the value in the fourth Row down in the column for the value 1980 in the Index Row

HLOOKUP(1980+3,ATTENDANCE,2)

Returns: 35, HLOOKUP returns the value the third Row down in the column under 1980 since this is the biggest number less than or equal to the offset expression 1980+3 in the Index Row

HLOOKUP(1970,ATTENDANCE,3)

Returns: NA, since there is no entry in the Index Row Range less than 1970.

INDEX

Finds a Value in a Cell of a Range at Specified Column and Row Offset

Argument: Range, Row Offset, Column Offset

Returns: Contents of Cell is a pre-defined Range that is a specified number of Columns and Rows into the Range. The first Column of the Range is the 0 Column and the top Row is the 0 Row.

If the Offsets are non-integer, MaxiPlan converts them to integers
If the an Offset is negative, MaxiPlan returns an ERROR.
If the Offset is outside of the Range it returns an ERROR.

Examples: Using the same example Range as in HLOOKUP.

INDEX(ATTENDANCE,0,1)

Returns: 1975

INDEX(ATTENDANCE,2,3)

Returns: 53

INDEX(ATTENDANCE,C172,3)

Returns: 51

INDEX(ATTENDANCE,8,3)

Returns: ERROR, since there are not 9 rows in the range ATTENDANCE

LOOKUP

Based on the selected entry in an Index Row or Column, returns the value either furthest to the right in the Lookup table along the Row for the selected value in the Column, or furthest Down in a Column if an Index Row is used. The Index Row must be in ascending or descending order and is always the top Row of the Lookup Table, while the Index Column will always be the left most Column of a Lookup Table. An Index Column must also be in ascending or descending order. The value selected in the Index column will be the largest value less than or equal to the Search Value.

Argument: Search Value, Range of Lookup Table. The Range can either be expressed as Cell Addresses, or as a Named Range.

Returns: The value for the Cell Contents of the Last Cell along the Row for the Cell selected in Index Column with a Value less than or equal to the Search Value. If an Index Row is used, the value for the Last Cell in the Column for the Cell selected in the Index Row of the Lookup Table Range. Values below of the Index Row return an ERROR.

Examples: Using Column H as the Index Column we will find in stock Inventory in Column I using the Lookup Table (H187:I193) named INVENTORY, Cost of the part using Column J and the Lookup Table (H187:J193) named COST, and Extension of the Inventory using Lookup Table (H187:K193) named EXTENSION.

	H	I	J	K
	Part No.	Inventory	Cost	Extension
186				
187	345	30	1.20	36.00
188	347	17	.85	14.45
189	349	28	1.65	46.20
190	456	5	2.07	10.35
191	459	32	.65	20.80
192	467	16	1.98	31.68
193	680	45	.52	23.40

LOOKUP(349,INVENTORY)

Returns: 28, the value in the last Cell in the Row containing the Search Value 349

LOOKUP(349,H187:I193)

Returns: 28, the value in the last Cell in the Row containing the Search Value 349

LOOKUP(349,COST)

Returns: 1.65, the value in the last Cell in the Row containing the Search Value 349

LOOKUP(349,H187:J193)

Returns: 1.65, the value in the last Cell in the Row containing the Search Value 349

LOOKUP(349,EXTENSION)

Returns: 46.2, the value in the last Cell in the Row containing the Search Value 349

LOOKUP(349,H187:K193)

Returns: 46.2, the value in the last Cell in the Row containing the Search Value 349

LOOKUP(650,H187:K193)

Returns: 31.68, the value in the last Cell in the Row for the value 467 selected by the Search Value 650, since 650 is less than 680 and greater than 467, so 467 becomes the selected value in the Index Column.

LOOKUP(700,H187:K193)

Returns: 23.40, the value in the last Cell in the Row for the value 680 selected by the Search Value 700, since 680 is largest value Index Column less than the Search Value 700.

LOOKUP(300,H187:K193)

Returns: ERROR since the Search Value 300 is less than 345, the smallest value in the Index Column.

VLOOKUP

Vertical or Column Lookup in a Range

Argument: Expression on Index Column, Range, Column Offset

Returns: Contents of a Cell located in Row defined by the expression on the Index Column of the Range and the number of Columns Offset. The first Column of the Range is the Index Column. This Column must be in ascending order and is used to determine the Row to lookup the data. The expression locates the Row by finding an entry in the Index Column which is the biggest or greatest item less than or equal to the result of the expression. Once a Column is selected, it then finds the Column determined by the Offset where the first Column is a 0 Offset, second Column 1 Offset, etc.

If the Offset is positive: VLOOKUP finds a Column further to the right in the Range

If the Offset is negative: VLOOKUP returns an ERROR

If the Offset is 0: VLOOKUP returns a value in the Index Column

Examples: The following Range has been named BIRTHWTS and is defined by the (H196:L205)

	H	I	J	K	L
195	Pounds	St. Mary	Memorial	General	Lutheran
196	1	45	98	120	56
197	2	120	232	325	131
198	3	356	776	878	402
199	4	428	853	1011	530
200	5	401	790	989	498
201	6	323	626	727	375
202	7	251	492	588	297
203	8	107	225	432	153
204	9	51	92	103	62
205	10	12	30	41	17

VLOOKUP(5.5,BIRTHWTS,4)

Returns: 498, since 5.5 is greater than 5 but less than 6, thus MaxiPlan looks along the Row for the 5 pound birth weights over 5 Columns or Column L

VLOOKUP(11,BIRTHWTS,2)

Returns: 30, since 10 is the largest value in the Index Column less than 11, VLOOKUP returns the value in Row for 10 pounds over 3 Columns or Column J

VLOOKUP(.5,BIRTHWTS,2)

Returns: NA, since there is no value in the Index Column less than .5 pounds

VLOOKUP(6,BIRTHWTS,8)

Returns: NA, since the offset 8 is beyond the Lookup Table range

Date Functions

Date Functions allow you to perform calculations based on a date entered in a Worksheet. MaxiPlan date functions convert a date into an internal Calendar date which ranges between January 1, 1978 to December 31, 2077, where January 1, 1978 is day 0, February 1, 1978 is day 31, etc. The days in this range are numbered sequentially for easy reference and for calculations such as aging of accounting data, follow up files, etc.

DATE

Date in Internal Calendar Number

Argument: Year Expression, Month Expression, Day Expression

Returns: Converts the date expressed in year, month, and day into a Internal Calendar number. Only accepts dates between January 1, 1978 and December 31, 2077.

Examples:

DATE(78,1,1)

Returns: 0, the Internal Calendar Number for January 1, 1978

DATE(78,2,1)

Returns: 31, the Internal Calendar Number for February 1, 1978

DATE(84,5,30)

Returns: 2341, the Internal Calendar Number for May 30, 1984 when formatted as GENERAL

DATE(84,5,30)

Returns: 30-May-84 when formatted as DATE mm-dd-yy

DATE(56,5,30)

Returns: ERROR, since May 30, 1956 is not in the Internal Calendar Number range of dates

DAY

Number of the Day of the Month

Argument: Internal Calendar Date Number for Date Expression

Returns: Number of the Day of the Month

Examples:

DAY(0)

Returns: 1 since 0 is the Internal Calendar Number for January 1, 1978

DAY(2325)

Returns: 14, since 2325 is the Internal Calendar Number for May 14, 1984

DAY(D206)

Returns: 8 since the contents of D206 is 3567, the Internal Calendar Number for October 8, 1987

MONTH

Number of the Month

Argument: Internal Calendar Date Number Expression

Returns: Month number of the Internal Calendar number between January 1, 1978 and December 31, 2077

Examples:

MONTH(0)

Returns: 1 since 0 is the Internal Calendar Number for January 1, 1978

MONTH(2325)

Returns: 5 since 2325 is the Internal Calendar Number for May 14, 1984

MONTH(D206)

Returns: 10 since the contents of D206 is 3567, the Internal Calendar Number for October 8, 1987

NOW

Current Time

Argument: None

Returns: For Cells formatted with the TIME format option, returns the current time of day when worksheet is recalculated. The actual value is number of ticks calibrated at 1/50th of a second (i.e. 50 ticks per second). This can be used to calculate differences between times of several events.

Examples:

NOW

Returns: 3734631 for a Cell formatted with GENERAL option when a recalculation is performed at 8:44 PM

NOW

Returns: 8:44 PM for a Cell formatted with TIME option when a recalculation is performed at 8:44 PM

TIME

Current Number of Ticks since midnight

Argument: Hours, minutes, seconds

Returns: Number of Ticks since midnight for the specified time. The Amiga DOS Operating System calculates time in 1/50th of a second (i.e. 50 ticks per second). Normally used with the TIME format option.

Examples:

TIME(5,23,12)

Returns: 969600, the number of ticks since midnight when formatted as GENERAL

TIME(5,23,12)

Returns: 5:23 AM, when formatted as TIME

TODAY

Internal Calendar Number for current date on Internal Clock

Argument: None

Returns: The Internal Calendar Number for the Current Date, or the number of days since January 1, 1978 till today. Usually used with the Date Format option.

Example:

TODAY

Returns: 3800, the Internal Calendar Date for the current date of May 28, 1988, when formatted as GENERAL

TODAY

Returns: 28-May-88, when formatted as DATE dd-mm-yy

WEEKDAY

Number of Day of the Week

Argument: Internal Calendar Number Date Expression

Returns: The day of the week expressed as a number where Sunday is 1, Monday is 2, Tuesday is 3, Wednesday is 4, Thursday is 5, Friday is 6, and Saturday is 7.

Examples:

WEEKDAY(0)

Returns: 1 since 0 is the Internal Calendar Number for January 1, 1978 and it fell on a Sunday

WEEKDAY(2325)

Returns: 2 since 2325 is the Internal Calendar Number for March 3, 1984 and it fell on a Monday

WEEKDAY(D206)

Returns: 5 since the contents of D206 is 3567, the Internal Calendar Number for October 8, 1987 and it fell on a Thursday

YEAR

Year Number

Argument: Internal Calendar Number Date Expression

Returns: Year number for Internal Calendar Number date between January 1, 1978 and December 31, 2077

Examples:

YEAR(0)

Returns: 1978 since 0 is the Internal Calendar Number for January 1, 1978

YEAR(2325)

Returns: 1984 since 2325 is the Internal Calendar Number for March 3, 1984

YEAR(D206)

Returns: 1987 since the contents of D206 is 3567, the Internal Calendar Number for October 8, 1987

Special Functions

MaxiPlan's special functions generally evaluate an expression and depending on the outcome of the evaluation chooses between two alternatives. These functions test for a TRUE condition, and then for example SAY one phrase if the expression is True or another expression if it is False. REFER function differs in that it is used strictly to link data between Worksheets.

COLOR

Chooses a Color Display based on a Test Expression

Argument: Test expression, True Color, False Color

Returns: Displays one of two alternative Colors for a Cell by evaluating a Test expression for a TRUE condition.

Examples:

PRINCIPAL + COLOR(PRINCIPAL > 20000,6,4)

Returns: 10000 displayed in the pen color 4, since the contents of the one Cell Named Range PRINCIPAL is 10000 and thus not greater than 20000, and thus the test expression is false and thus the false color is the result.

PRINCIPAL + COLOR(PRINCIPAL < 20000,6,4)

Returns: 10000 displayed in the pen color 6, since the contents of the one Cell Named Range PRINCIPAL is 10000 and thus the test expression is true and since PRINCIPAL is less than 20000 and thus the true color is the result.

SUM(G1:G6) + COLOR(C225 < 200,6,4)

Returns: 370 displayed in the pen color 6. Note this example is in Cell C225 of the Built-In Function Worksheet. It first performs a calculation and then evaluates the results to determine which color to display the results.

REFER

Brings Data into one Cell of a Worksheet from one Cell of another Worksheet

Argument: Drive Name:Drawer Name/Worksheet Name, Cell Range Name. REFER must use a Named Cell not a Cell Address, and each argument must be surrounded by single quote marks. REFER accesses data from Worksheets saved to a disk. A Worksheet need not be Open to access data, however any changes made must be saved to disk before REFER can access the changes.

Returns: Data is pulled from one Worksheet to be used in another. The Worksheets can be on same or different Disks. If data is pulled from a Worksheet on a different Disk, the new Disk Name must be incorporated in the Path Name argument for the REFER function.

Example:

The Cell for income in the Division 1 Worksheet is named INCOME. To incorporate the data onto the Consolidated Worksheet, you would use the REFER function in an appropriate Cell of the Consolidated Worksheet as follows:

REFER('MaxiPlan Data:Worksheets/Division 1','INCOME')

Returns: 24556, The value in Cell named INCOME from the Division 1 Worksheet

SAY

Tests an Expression and if True produces Spoken Output

Argument: Test Expression, Spoken String, Cell Reference Note: the Spoken String must be surrounded by quotes.

Returns: The Test Expression is evaluated. If it is False, nothing is spoken. If it is true, the Spoken String is processed. A Cell Reference may or may not be included in the spoken output. If the contents of the Cell Reference is a label or text, then you must use %s in the Spoken String. A reference to a Cell with numeric data must use %m.nf where m is the number of total digits in the number and n the number of decimal places you wish to be spoken.

Note: Experienced users may observe that the Spoken String is in standard C language formatting. If the single cell in the Cell Reference contain a label then the address of the Cell is used. For cells referenced containing numeric data, the double precision floating point value of the cell is used.

Example:

SAY(TRUE(),'MaxiPlan is a Fantastic Program')

Returns the spoken output in quotes since the True function always returns a True result.

SAY(G1 < 50,'G1 has the value %5.2f',G1)

Returns the spoken output in quotes with two decimal points for the value in G1 since the contents of G1 is less than 50. In the spoken output to refer to cell with numeric data you have to use the %m.nf format.

SAY(G1 < 50,'G1 has the value %5.0f',G1)

Returns the spoken output in quotes with no decimal points since the contents of G1 is less than 50. In the spoken output to refer to cell with numeric data you have to use the %m.nf format.

SAY(G2 > G1,'%s is the winner',D229)

Returns the spoken output "Harry is the winner" since the contents of Cell G2 is greater than that of Cell G1. The spoken output incorporates additional text to be spoken at the Cell Address D229 "Harry". Since the data in D229 is a label or text, it must be referred to as a Spoken String by %s.

STYLE

Chooses a Style Display based on a Test Expression

Argument: Test Expression, True Style, False Style

Returns: If the Test Expression is True, the display will be in the Style option for True. A False outcome results in a display in the False Style option. Style options are numbered 0 to 7 and are as follows:

Style Number	Style
0	Normal
1	Bold
2	Underline
3	Bold & Underline
4	Italic
5	Bold & Italic
6	Underline & Italic
7	Bold & Underline & Italic

To retain the current format, -1 is selected as the Style Option for either the True or False styles.

Examples:

PRINCIPAL + STYLE(PRINCIPAL < 20000,1,2)

Returns: 10000 displayed in Bold, since the contents of the one Cell Named Range is 10000, less than 20000 thus the true STYLE option Bold is selected.

G1 + STYLE(G1 < 50,2,4)

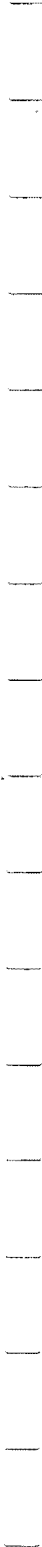
Returns: 45, displayed as Underline, since G1's contents is 45 and thus less than 50, the contents of Cell G1 is displayed in Underline, the true STYLE option.

G1 + STYLE(G1 > 50,2,-1)

Returns: 45, displayed in General, since 45 the contents of G1 is not greater than 50, thus -1, the false STYLE option is selected, where -1 is the option not to change from the current STYLE selected.

STYLE(B4 < 20,-1,1)

Returns: If B4 is less than 20, the Test Expression is True and the original Cell format is retained. If the Test Expression is False, then the Cell is displayed in Bold.



Chapter 21

MaxiPlan COMMAND GLOSSARY

Most of MaxiPlan's commands can be activated through the Pull Down Menu. However, there are times when it is more practical to access a command via a Function Key or from the keyboard with an Amiga Key and other times using the Mouse to pull down a Menu is the more efficient approach.

The following is a list of MaxiPlan Menus and commands with a brief description. This is followed by a list of alternative methods for executing the commands via the Right Amiga Key, Function Keys and Command Key.

Control Menu

Sets global parameters for Worksheets.

New Worksheet

Creates a blank Worksheet.

New Macrosheet

Creates a blank Macrosheet.

Open Worksheet

Opens an existing Worksheet

Delete File

Removes an existing Worksheet/Macrosheet File from the Disk

Color Selection

Change Color Mode

Maximum Window Size

Choose Window Size

About MaxiPlan

Copyright Message and Programmer Credits

Open Workbench

Opens the Amiga Workbench

Close Workbench

Closes the Amiga Workbench

Automatic Macros

Runs Automatic Macros

Fast Cell Display

Speeds up Screen Refreshing Process

Quit

Exit MaxiPlan

Printer Control Menu

Menu Items on the Printer Control Menu substitute for access to Printer Preferences on the Workbench. Items included are the more frequently used adjustments to printers.

Printer Output

Determines if codes for Color Printers are outputted. If a Color Printer is hooked up, then this must be set to Color

Submenu Items include:

Black & White

No Color codes outputted.

Color

Color codes outputted.

Print Type Size

Dictates the type point used.

Submenu Items include:

Pica

Elite

Fine

Set Left Margin

Brings up a Requester for keying in the character position of the left margin.

Set Right Margin

Brings up a Requester for keying in the character position of the right margin.

Set Page Length

Brings up a Requester for keying in the number of lines for print output.

Perform Form Feed

Commands the printer to go to the top of the page after printing a Worksheet.

Line Spacing

Determines the number of lines per inch.

Submenu Items include:

6 lines per inch

8 lines per inch

Print Quality

Dictates the of print output, that is how clear it appears.

Submenu Items include:

Draft Quality

Letter Quality

Project Menu

Items on the Project Menu generally perform on the whole Worksheet file, rather than a portion of a Worksheet such as a Range or a Cell.

New Worksheet

Creates a blank Worksheet.

New Macrosheet

Creates a blank Macrosheet

Open Worksheet

Opens an existing Worksheet

Delete File

Removes an existing Worksheet/Macrosheet File from the Disk

Close Worksheet

Closes an existing Worksheet/Macrosheet

Save

Saves both newly created and altered Worksheet/Macrosheet

Save As

Saves Existing Worksheet/Macrosheet Under New and Current File Name

Print

Prints Worksheet/Macrosheet.

Submenu Items include:

Printer

Output to Printer.

File

Output to Disk File

Print Set Up

Describes Appearance of Output

Submenu Items include:

None

No Special Output

Grid Lines

Print with Grid Lines

Page # at Top

With Page Numbers at Top of Page

Row/Col Headings

Print Showing Row Numbers and Column Letters

Date/Time at Top

Print Date and Time at Top of the Page

Title at Top

Print Custom Title at Top of Page

File Name at Top

Print File Name at Top of Page

Set Print Title

Key in Custom Title

Worksheet Status

Displays a Requester window describing size of Worksheet, size of Clipboard, and other statistics.

About MaxiPlan

Copyright Message and Programmer Credits

Open Workbench

Opens the Amiga Workbench

Close Workbench

Closes the Amiga Workbench

Fast Cell Display

Speeds up Screen Refreshing Process

Submenu Items include:

On

Off

Project Help

Help Text for the Project Menu Commands

Edit Menu

Commands on the Edit Menu manipulate Cells and Ranges of the Worksheet including naming a Range or changing the name of a Range.

Cut

Removes Range from current location and saves to Clipboard.

Copy

Saves Range to the Clipboard and leaves in current location.

Paste

Pastes contents of Clipboard to New Location including Format

Paste Data

Pastes contents of Clipboard to New Location in default format.

Clear

Removes contents of Range including Format.

Clear Data

Removes contents of Range but leaves Format intact.

Define Name

Defines the Name of a Range.

Modify Name

Alters the Name of a Range.

Delete Name

Deletes the Name of a Range.

Paste Function

Paste Function in Active Cell from Function Windows.

Paste Name

Paste Named Range in Active Cell for Range From Names Selector Window

Edit Help

Help Text for Edit Menu.

Format Menu

Used to dictate format of a Cell or Range of Cells including Column Width, alignment in Cell, Colors, and Cell Protection.

General

Displays what is Keyed In.

Currency

Displays Customized Currency Sign.

Fixed

Displays as an Integer.

Date

Displays as one of the Date Formats.
Submenu Items include:

dd/mm/yy

dd/mm

mm/yy

Time

Displays in a Time Format.

Decimals

Displays as a fixed number of decimals.
Submenu Items include:

None

...

9

Percent

Displays as a Percentage.

Pen Color

Submenu Items include:

Eight Choices of Pen Colors

Commas

Display with or without Commas.

Submenu Items include:

On

Off

Width

Define Column Width.

Submenu Items include:

Standard

10 Character Width

Wide

31 Character Width

Specify

Define Character Width

Alignment

Defines justification of Cell Entries.

Submenu Items include:

Default

Default justification for type of data entered in Cell.

Left

Justify Left.

Center

Justify Center.

Right

Justify Right.

Style

Defines Type Face.
Submenu Items include:

Normal

Regular Type Face.

Bold

Bold Type Face.

Underline

With Underline.

Italic

Italic Type Face.

Protect

Define Cell Protection for Range.

Submenu Items include:

Yes**No****Password**

Define Password.

Yes**No****Palette**

Displays Pop Up Window with Slide Bars to Mix Colors.

Format Help

Help Text for Format Menu.

Options Menu

Commands in the Options Menu govern the Maxi-Plan user interface such as the movement of the Return Key, calculation order, speech, etc.

Show

Dictates How Formula Cells are Displayed.

Submenu Items include:

Values

Show Formulas as Values.

Formulas

Show Formulas as Formulas.

Cell Note Output

Dictates How Cell Notes are Given when Help Key is Pressed.

Submenu Items include:

Off

No Response to Help

Speech Only

Cell Note Recited when Help Key Engaged.

Text Only

Pop Up Window Displayed with Cell Note when Help Key Engaged.

Text & Speech

Both a Pop Up Window Displayed and Cell Note Recited when Help Key Engaged.

Wordstar Keys

Enables or Disables movement of the Active Cell using Wordstar Key commands as shown below:

Control Key with X Key: Moves Active Cell Down

Control Key with S Key: Moves Active Cell Left

Control Key with D Key: Moves Active Cell Right

Control Key with E Key: Moves Active Cell Up

Submenu Items include:

On

Wordstar Keys Enabled.

Off

Wordstar Keys Disabled.

Protection

Enables or Disables Cell Protection.

Enabled

Cell Protection Enabled.

Disabled

Cell Protection Disabled.

Freeze Titles

Makes any set of Rows and Columns Stationary when Window is Scrolled.

Submenu Items include:

None

Titles Not Stationary.

Rows

Horizontal Rows Stationary.

Columns

Vertical Titles Stationary.

Both

Both Vertical & Horizontal Titles Stationary.

Keyboard Echo

Enables and Disables Keyboard Echo, that is reciting of data as it is keyed in.

Submenu Items included:

Off**On****Display Grid**

Dictates Screen Display of Grid.

Submenu Items include:

On**Off****Return Key**

Dictates movement of Return Key.

Submenu Items include:

Move Down

Active Cell Moves Down after Return Key Engaged.

Move Right

Active Cell Moves Right after Return Key Engaged.

Doesn't Move

No Movement after Return Key Engaged.

Calculation Order

Dictates Order that Formulas in Cells are Calculated.

Natural

As directed by Cell References as they are incurred.

Row by Row

First Row evaluated, then second Row, third, etc.

Col by Col

First Col evaluated, then second Col, third, etc.

Set Password

Displays Requester to Define Password.

Set Currency

Displays Requester to Define Currency Symbol or Symbols.

Options Help

Help Text for Options Menu.

Commands Menu

Dictates contents of Cell Notes, how Ranges are recited, and lay out of charts from data.

Select

Selection of next site for Active Cell.

Submenu Items include:

All Cells

highlights the Entire Worksheet.

Last Cell

Moves Active Cell to Bottom Right Cell of the Worksheet.

Active Cell

Moves display window such that Active Cell in top left hand corner of window.

Specify Location

Specify site of Active Cell by Cell Address.

Specify Name

Specify site of Active Cell by Range Name.

Calculate

Dictates Automatic Recalculations.

Automatic

Recalculations On Going.

Manual

Recalculations Manually dictated.

Now

Perform Calculation Now.

Cell Note

Defines contents of Cell Note.

Submenu Items include:

Add/Change

Create or Alter Cell Note.

Erase

Eliminate Cell Note.

Insert

Causes insertion of either a Row or Column. If more than one Row or Column selected, multiple Rows or Columns will be inserted.

Submenu Items include:

Row

Column

Delete

Causes deletion of either a Row or Column. If more than one Row or Column selected, multiple Rows or Columns will be deleted.

Submenu Items include:

Row

Column

Fill

Pastes Clipboard over Selected Range.

Submenu Items include:

Down

Fills Downward in Range.

Right

Fills to Right in Range.

Read Range

Recite the Entries in Highlighted Range.

Submenu Items include:

No Cell Name

Do Not Say Cell Address.

Say Cell Name

Say Cell Address.

Easy Sort

Executes a sort of Rows based on contents of left most Column in highlighted Range.

Submenu Items include:

Ascending (A to Z)

Sorts in Ascending Order.

Descending (Z to A)

Sorts in Descending Order.

Perform Form Feed

Executes a Form Feed to bring the printer to the top of the next page of paper.

Commands Help

Help Text for Commands Menu.

Data Menu

Commands associated with building Databases.

Find

Based on Selected Criteria, highlights Records one at a time.

Extract

Based on Selected Criteria, Sets aside a group of Records.

Submenu Items include:

All

Set aside all Matching Records.

Unique

Removes duplicate Records, and then sets aside.

Delete

Based on Selected Criteria, Delete Matching Records.

Submenu Items include:

Single Record

Delete One Highlighted Record at a Time. Confirm each deletion.

Matching Records

Delete All Records Matching Criteria. Confirms each deletion.

Define Database

Define Database to be the Highlighted Range.

Define Criteria

Set aside the Highlighted Range for Database Criteria.

Select Database

Choose previously defined Database.

Select Criteria

Choose previously defined Database Criteria.

Sort

Based on Selected Criteria, reorder the records in the Highlighted Range.

Save Data as Text

Save Highlighted Range as a Text File.

Load Data as Text

Import Text file into Highlighted Range.

Data Help

Help Text for Data Menu.

Chart Menu

Defines MaxiPlan Charts, outputs Charts to printer or IFF file, and permits dynamic linkage between Charts and data.

Draw

Specify or execute a drawing of a Chart.

Submenu includes eight Chart numbers.

Bar

Bar Chart Style.

Line

Line Chart Style.

Area

Area Chart Style.

Pie

Pie Chart Style.

X-Y

X-Y Chart Style.

3D Bar

3D Bar Chart Style.

Stack Bar

Stack Bar Chart Style.

Step

Step Chart Style.

Hi-Lo

Hi-Lo Chart Style.

Pie

3D Pie Chart Style.

Remove

Remove Chart.

Submenu includes eight Chart numbers to select for deleting.

Chart Help

Help Text for Chart Menu on Worksheet.

The following Menus are on the Chart Drawing Window.

Chart Control Menu

This Menu appears on the Chart Control Window and is used for specifying the Chart, printing the Chart, and converting a Chart into IFF File Format for export to a paint program.

Specify

Brings up a Requester for specifying details concerning titles, labels, Row vs Column orientation, scaling, etc.

Print

This command executes a printing of the Chart into a hardcopy.

Capture

Used to save a Chart as an IFF File for export to paint programs.

Palette

Brings up a Requester with the color specification slide bars.

Close

Closes the Chart Drawing Window.

Help

Displays the Help Text for the Chart Drawing Window.

Chart Type Menu

This Menu is available on the Chart Drawing Window and contains 10 Menu Items for each Chart Type so that a Chart can be redrawn in another Chart style.

Options Menu

This Menu is available on the Chart Drawing Window and varies according to the Chart Type currently drawn in the Chart Drawing Window. Below is list of the Options for Charts.

Axis

Turns display of X and Y axes on or off.

Grid

Turns display of either the X or Y Grid on or off.

Ticks

Turns display of scaling markers on the X or Y axes on or off.

Scale

Inserts numbers along the axis.

Edges

Turns display of lines outlining Chart elements on or off.

Smart Labels

Turns on or off the ability of MaxiPlan to determine the best display of labels when the Chart Drawing Window is too small or the label titles too long.

Symbols

Turns on or off the display of small graphic objects on Line and Scatter Charts.

0,0 Break

Allows the interruption of tracings with X-Y scatter Charts.

3 Variables

This option is only available on the HI-Lo Chart type. It is for determining if 2 or 3 variables are to be plotted.

Colors Menu

This Menu is available on the Chart Drawing Window and gives you the ability to alter Colors for elements of the Chart.

Border

Used to change the outside of the axes area of the Chart.

Titles

Used to change the color of the Text of the Titles on the Chart.

Text

Used to change the color of label text.

Lines

Used to change the color of lines on the Chart.

Data Area

Used to change the color within the axes of the Chart.

Right Amiga Key Menu Command Equivalents

The following Menu Commands can also be accessed via pressing the Right Amiga Key with the indicated letter or symbol key.

New Worksheet:	N
New Macrosheet:	M
Open Worksheet:	O
Close Worksheet:	W
Save:	S
Cut:	X
Copy:	C
Paste:	P
Clear:	B
Find:	F
Calculate Now:	=
Freeze Titles - Rows:	H
Freeze Titles - Column:	V
Fill Down:	D
Fill Right:	R
Quit:	Z

Control Key Commands

The following is a list of active cell movement commands used with the control key depressed.

Down:	M
Down:	X
Left:	S
Left:	I
Right:	D
Goto:	G
Down one row to column A	J
Down one row to col. A	<CR>

Function Key Menu Command Equivalents

The following is a list of the Function Key equivalent for Menu Commands.

Calculate Now:	F1
Cut:	F2
Copy:	F3
Paste:	F4
Clear:	F5
Select Cell:	F6
Fill Right:	F7
Fill Down:	F8
Insert Row:	F9
Insert Column:	F10
Save :	Shift-F1
Paste:	Shift-F2
Align :	Shift-F3
Paste Data:	Shift-F4
Clear Data:	Shift-F5
EZ Sort :	Shift-F6
Sort:	Shift-F7
Find :	Shift-F8
Select (Cell) A1:	Shift-F9
Select Last Cell:	Shift-F10

Chapter 22

INTRODUCTION to MACROS

This part of the Manual discusses MaxiPlan Macro Language. It is organized into four sections:

- Macro Basics
- Macro Tutorial
- Macro Reference
- Sample Macro Programs

MaxiPlan is the first program for the Amiga to provide the power of a Macro Language similar to that found with Microsoft Excel for the Macintosh. MaxiPlan Plus' Macro Language is comprised of over 95 Macro Functions. Each Macro Function is a succinct instruction to MaxiPlan that can either

- emulate a Worksheet action - called Action Equivalent Macro Functions,or
- control the execution of the Macro - called Control Equivalent Macro Functions.

Examples of Worksheet actions that can be emulated by a Macro are:

Action	Macro Functions
Set Column Width to 20	=FORMAT(9,2,20)
Copy Cell A3 to Cell A4	=COPY(A3)
	=PASTE(A4)

Examples of control of the execution of a Macro are:

Activity	Macro Functions
Compare contents of Cell B4 to the text string, if equal go to Cell C2 on the Macrosheet, if unequal drop down to the next Macro Function.	=LIF_GOTO(B4="Good",C2)
Display a picture of a Logo from a paint program for 5 seconds.	=SHOW("LOGO",50)

In addition, MaxiPlan Macros can utilize the regular built-in Formula Functions of MaxiPlan itself. Thus altogether there are nearly 200 instructions functions available for building MaxiPlan Macros.

MaxiPlan's Macro Language facility

- allows up to 64 Macros to be defined on a Macrosheet
- allows access to any Macrosheet by any Worksheet
- executes a Macro by selecting its name either through the Macros Menu or by a combination of the Control Key and the "R" key for Run Macro
- can automatically generate Macros by "Recording" Worksheet actions
- imports files from other Amiga programs for usage in Worksheets.

To examine a selection of pre-programmed Macros, please review the Macrosheets Drawer on the Utility/Data Disk which accompanies MaxiPlan.

However, since doing is the best way to learn we suggest you try out the simple examples in each of the lessons as you go along.

A simple method to learn how each Macro Function works, is to open up a Macrosheet and make a simple Macro for each function. Typically they will be three lines long where:

- first line is the Macro Name
- second line is the Macro Function with appropriate arguments
- third line is the Macro Function RETURN to end the Macro.

In the Macrosheet drawer of the Utilities/Data disk are macrosheets illustrating each macro instruction.

Creating a three line program will usually let you see how the Macro Function works. Then key in the correct data for the Macro on a Worksheet and then execute the Macro.

If you have any questions or problems concerning the usage of Macros or any other aspect of MaxiPlan, you can contact our Technical Support Department at (213) 427-1227 between 9AM to 5PM California Time Monday through Friday.

Chapter 23

MACRO BASICS

A Macro is a mini-program written with pre-defined functions called Macro Functions. The pre-defined functions are known as the Macro Language. Macros are used to automate a sequence of MaxiPlan operations, to make decisions between alternatives and to generally provide greater flexibility for spreadsheet analysis with MaxiPlan.

All Macros result in an "action". Macros can either duplicate actions you perform manually using MaxiPlan or execute interactive "actions" that you perform by making an observation and then a decision. For example, deciding if a database record is the desired record and then if the Find action should be executed again or not.

Components of a Macro

The Macro is keyed or automatically recorded on a special Worksheet called a Macrosheet. The Macro itself is written into one of the Columns of the Macrosheet. Each Macro begins with the Macro name in the top Cell of the Column. This is followed by a series of instructions or formulas. Each Cell in the Column on the Macrosheet for the Macro contains either a Macro instruction or notes describing the Macro's activities. Any blank Cells will interrupt the execution of the Macro.

A Macro instruction begins with an equal sign followed by a Macro Function acting upon an argument. Since Macro instructions take the form of formulas, we will refer interchangeably between instructions and formulas throughout this section of the manual.

Macro Functions return values and perform tasks like other functions. Macros are run by selecting the name of the Macro from a list in a Name Selector or by giving its beginning Cell Address on the Macrosheet. The list of Macros can be displayed by:

- selecting "Run" on the Macro Menu of either a Worksheet or a Macrosheet

To Create a Macro

Once a Macro Name is keyed into the first cell of the column on the Macrosheet, you can then designate that it is a Macro by:

- pulling down the Macro Menu
- selecting the Set Recorder Menu Item
- Keying in the Name of the Macro
- clicking on the OK Button

This will add the Macro to the list of Macros saved to the Macrosheet.

Execution of a Macro

When invoked a Macro will execute at the site on the Worksheet where the Active Cell is located. To execute a Macro:

- move the Active Cell to the desired location on the Worksheet
- pull down the Macro Menu on the Worksheet
- select the Run Menu Item
- click on the Name of the Macro in the Macro Selector
- click on the OK button

Description of the Macrosheet

Macros are written and stored on a special type of Worksheet called a Macrosheet. They resemble Worksheets, but have special attributes. Macrosheets are accessed in the same manner as any other Worksheet. Any Macrosheet can be used by any Worksheet, but it is generally best to keep all the Macros applicable to a particular Worksheet on one Macrosheet.

Opening a Macrosheet

You open an existing Macrosheet in the same manner as you open an existing Worksheet. You select the Project Menu and then the Menu Item Open Worksheet. The screen will display the Worksheet Name Selector. To select a Macrosheet double click on the Macrosheet name with the Select (left) mouse button.

Creating a Macrosheet

To create a Macrosheet, you select the Project Menu and then the Menu Item New Macrosheet. When you save the Macrosheet, you will give it a name. It is best to give Macrosheets names which convey that they are Macrosheets and not Worksheets.

Naming a Macrosheet

Since Worksheets and Macrosheets are both displayed on the Worksheet Name Selector, it is best to give Macrosheets names which tell you they are Macrosheets as opposed to Worksheets. It is also helpful to choose a name that is descriptive of the types of Macros or application of the Macros contained on the Macrosheet such as PRT_INVOICE_MACR. Macrosheet names, like Worksheet names, are limited to 16 characters.

Macrosheet Specifications

A Macro is written and stored in one Column of the Macrosheet. Up to 64 Macros can be defined per Macrosheet. You can insert Columns containing comments to describe your Macros, this will not reduce the number of maximum Macros that can be stored on a Macrosheet.

The default column width for a Macrosheet is wider than a regular Worksheet to accommodate most Macro Functions. This width can be changed with the maximum width being 57 characters. If the Macro instruction exceeds the column width, it will not be displayed but will still be part of the Macro and effect its execution.

It is possible to create Named Ranges in a Macrosheet in the same manner you create Named Ranges for a Worksheet. Named Ranges on the Macrosheet do reduce the number of Macros you can save on the Macrosheet. A Macrosheet has a maximum of 64 named objects which may be either Macros, Named Ranges, or Submacros.

Macrosheets have additional special attributes

- Each Column in a Macrosheet can contain more than one Macro
- The first Cell of a Macro must always contain the Macro Name
- A blank Cell in the middle of a Macro will stop the execution of the Macro, thus blank Cells should be avoided
- Cell references on the Macrosheet are automatically adjusted if the Cell Address is preceded by # whenever commands such as insert, fill, paste, or copy are executed. If the # is left off, it refers to the Worksheet and thus it does not effect where the Macro looks for the next instruction to execute.
- Calculations are only performed when the Macro is executed, not as information is entered on the Macrosheet.
- The normal mode of a Macrosheet is to display formulas, while the Value mode shows the results of values of the formulas.

Components of Macro Functions

Macro Functions, like the built-in Formula functions, are comprised of a function name and an argument. Not every Macro function requires an argument, but those that do have their arguments surrounded by a set of parenthesis. The Macro Function takes the form:

**Name(argument), or
Name(argument 1, argument 2, ...).**

Macro Function Arguments

Arguments for a Macro Function take many forms. It may be a Cell or a Named Range either on the Worksheet or Macrosheet. An argument can be a code to designate a Menu Item and an associated Submenu Item.

An argument may be an expression, which is a statement that is first evaluated and then acted upon by the Macro Function. Finally, an argument can even be a text string or a label.

Macro Function Cell References

Some Macro Functions only refer to Cells on the Macrosheet, while others only refer to a Worksheet. It is a MaxiPlan Plus convention to refer to Cells on the Macrosheet with the

pre-fix "#" before the Cell Address. When referring to a Cell on the Worksheet, no pre-fix is used. For example In the Macro Function

```
=IF_GOTO(A30,#B7)
```

the reference A3 refers to the Worksheet while #B7 refers to a Cell on the Macrosheet.

Using Label Reference in a Macro

A Macro Function can use a Label as a reference rather than a Cell Address. A Label is a Cell imbedded in the Macro which is a text string for identifying a specific spot on the Macro. Labels help point to a specific set of instructions within the Macro. Typically Labels are used when you want the program to loop through the same set of Macro Instructions several times. They help "point" to the first instruction to execute while looping inside a Macro. When a Label is later referred to in the Macro, it must be surrounded by quotation marks.

Text Strings

Text Strings used in a Macro must be surrounded by quote marks. Either single or double quotes can be used. When recording a Macro, single quotes are automatically inserted rather than double quotes.

Usage of Quotation Marks

The general rule to follow regarding usage of quotation marks in Macro Function arguments is that if the Macro Function is naming an object such as a Range, Database, or Database Criteria; then the new "name" should be surrounded by single quotes. Thus Macro Functions like DEFINE.NAME, DEFINE.CRITERIA, and DEFINE.DATA will always have quotation marks surrounding their arguments.

After the object has been named and saved to the disk and is now listed on a MaxiPlan Selector, its name can be an argument for a Macro Function and not require that it be surrounded by quotation marks.

For example:

```
=SELECT.DATA(Sales)
```

will make the Database called "Sales" the active Database, but since it is already named, you do not have to insert quotation marks in the argument of this Macro Function.

There are some exceptions to these rules. For example, the ANALYZE Macro Function requires that its arguments be surrounded by quotation marks. Any text string must also be surrounded by quotation marks, especially if it has embedded blanks.

Chapter 24

MACRO Lessons

This section of the Manual is a series of Lessons which explains some of the finer points in usage of Macros. Some of the Lessons address how to perform special actions such as Cutting and Pasting between Worksheets. Another group of Lessons are devoted to outlining the effects of some of the more powerful and useful Macro Functions. These Chapters include examples of how to use each of the Macro Functions. The examples in the Lessons were deliberately kept simple. To get a good idea of how Macros work, you should take the time to key in the example Macros on a Macrosheet, and then execute them on a blank Worksheet.

Lesson One:

CREATE, MODIFY, AND EXECUTE A MACRO

Creating a Macro involves setting up a series of Macro Functions on a Column on a Macrosheet. Thus to create a Macro you must first either open an existing Macrosheet or create a new Macrosheet. Every Macro follows a basic format: the first Cell in the Column contains the Macro Name, the following Cells contain the Macro Instructions, and the last Cell of the Macro contains the instruction RETURN to stop the execution of the Macro and return MaxiPlan to the Worksheet.

In this Lesson you will learn to:

- Open an Existing Macrosheet
- Create a New Macrosheet
- Save a Macrosheet
- Create a Simple Macro
- Close a Macrosheet
- Execute a Macro
- Modify a Macro

Open an Existing Macrosheet

It is usually best to keep related Macros on the same Macrosheet. Thus if you are creating a Macro which is related to those on an existing Macrosheet, you will want to key it on that Macrosheet.

To open an existing Macrosheet:

- pull down the Project Menu
- select the Open Worksheet Menu Item
- find the desired Macrosheet name using the mouse and the scroll bars
- double click on the Macrosheet name to open the Macrosheet

The Macrosheet will then be displayed and ready to receive the new Macro.

Creating a New Macrosheet

If the Macro is the first of new type, or it does not belong on any other Macrosheet, you may wish to create an entirely new Macrosheet.

To create a new Macrosheet:

- pull down the Project Menu
- select the New Macrosheet Menu Item

A blank Macrosheet is displayed for keying in the new Macro.

Creating a Macro

The Macro itself is a series of Macro Functions. As the Macro executes, it evaluates each Macro Function and performs the indicated activity of the Macro Function. After performing the activity of first Macro Function, the Macro drops down the Column of Macro Functions and evaluates the next Macro function. It will only branch to another location on the Macrosheet if some sort conditional evaluation has been created with a Macro Function like IF_GOTO. The execution of the Macro is finally ended with the Macro Function RETURN.

Once the instructions for the Macro are keyed in, select the Cell with the name of the Macro and pull down the MACROS Menu. Select the SET RECORDER Menu Item in order to either add the Macro Name to the list presented with the RUN Macro command, or to save the latest version of a Macro.

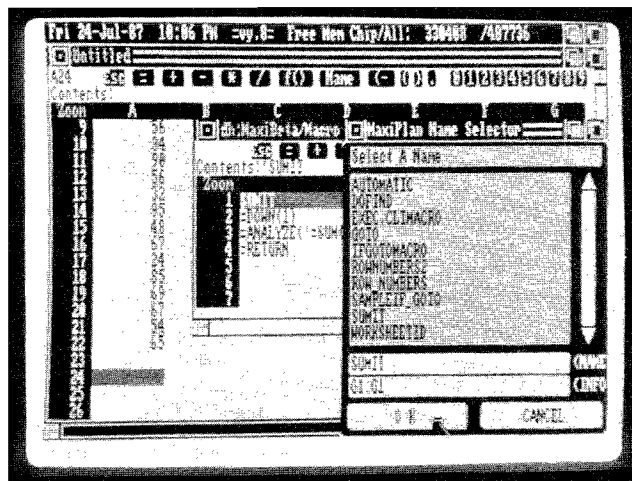
When formulating Macros, it is important to remember that the first Cell of the Macro must be the name of the Macro. Typically it is best to select a name which is descriptive of the activity accomplished by the Macro. In our example, we will create a Macro which sums a column of 20 numbers. To remind us of what the Macro does, we have named it SUMIT.

Once a Column of 20 numbers has been entered, the SUMIT Macro will automatically sum the Cells starting at the Cell 22 above the location of the execution of the Macro and stopping 2 Cells above. Thus if you invoke (run) the Macro at Cell C34, it will sum the Cells in the Range (C10:C32) and place the result in Cell C35.

Thus on the Macrosheet you would key in the following set of Macro Functions.

A		
+-----+		
1	SUMIT	<---- Name of the Macro
2	=DOWN(1)	<---- Move Down 1 Row
3	=ANALYZE('=SUM(CELL(0,-22):CELL(0,-2)')	<---- Sum Range of Cells starting 22 Rows up from the Active Cell and stopping at two Cells up
4	=RETURN	<---- End Macro and Display Result

This Macro can be run anywhere on the Worksheet. It will automatically sum the Cells in the same Column where it is invoked but start 22 Rows above the Active Cell of the Worksheet, the site of the Macro execution.



In the Macrosheet, a Macro is always written as a series of formulas with no blank cells in between the instructions. You can insert comments in the middle of your Macro as is shown in the above example. Throughout this manual we will show explanations for Macro in italics either just below the instruction or along side as shown above.

A few important concepts concerning Macros are illustrated by this example. Note that it uses regular built-in functions such as SUM with the special Macro functions like CELL. Usage of Macros expands the application of regular functions as well automates much of tediousness associated with selecting ranges and specifying function arguments.

The SUM function depicts a usage of nesting within a function argument. This allows greater flexibility, but necessitates a careful monitoring of parenthesis to prevent errors.

Save a Macrosheet

A Macrosheet is saved in the same manner as a Worksheet. If it has not been saved before, the File Selector will be displayed for entering in a file name for the Macrosheet. If the Macrosheet has been named, executing SAVE will cause the current version to be written over the last version of the Macrosheet. The SAVE AS command is available for creating duplicate Macrosheets if that is appropriate.

To execute SAVE

- pull down the PROJECT Menu
- select the SAVE Menu Item

SAVE can also be invoked by the F1 Function key with the Shift key or by pressing the Right Amiga key with the S key.

Execute a Macro

Any Macro can be executed from any Worksheet. However, since the Macro typically goes to specific Cell Addresses on the Worksheet, it is best to make certain that the data needed by the Macro is at the appropriate locations on the Worksheet. Thus while any Macro can be used by any Worksheet, Macros are typically designed for specific Worksheets.

Before executing a Macro, the Macrosheet on which it is written must be open. To open a Macrosheet, pull down the PROJECT Menu and select the OPEN WORKSHEET Menu Item. The MaxiPlan File Selector will be displayed listing both Worksheet files and Macrosheet files. Select the desired Macrosheet, this will then open the Macrosheet.

To get back to the Worksheet, click on the Front Window Gadget in the upper right hand corner of the window.

If the Worksheet is blank, key in a Column of 20 numbers. Then select the Cell two Cells below the last of the 20 Cells, and pull down the Macros Menu and select the RUN Menu Item.

A Requester will be displayed listing the Macros on the open Macrosheet. To select a Macro, double click on its name with the left mouse button.

The Macro will execute and display its results on the Worksheet. Congratulations, you have just created and run your first Macro. This Macro can be used anywhere you have a Column of 20 numbers to sum.

Modify a Macro

Supposing instead of a Column of 20 numbers, you wish to sum a Column of 50 numbers. You can edit the SUMIT Macro rather than rewriting a new Macro.

Simply open the Macrosheet, click on the Cell that contains the actual SUM function, and then change the -22 to -52 in the Cell Contents Display. Then press Return to alter the

Cell's contents. Before closing the Macrosheet, it must be saved to write over the existing Macrosheet if you wish to permanently alter the Macro.

If you wish to expand the Macro to include more analytical steps, you can click on the Cell with the RETURN Macro Function and beginning adding additional instructions. When you are through extending the Macro, key in the RETURN Macro Function to end the expanded Macro.

After the Macro has been altered, to save the new version of the Macro you must again pull down the MACROS Menu and select the SET RECORDER Menu Item. This will write the current version of the Macro over the original version.

Close a Macrosheet

To Close a Macrosheet, select the PROJECT Menu on the Macrosheet and select the CLOSE MACROSHEET Menu Item. A Macrosheet can also be closed by clicking on the Close Gadget in the upper left hand corner of the widow.

Lesson Two:

THE SELECT FUNCTIONS

Select functions direct the selection of a Range of Cells, or a particular Cell. Their fundamental purpose is to move the Active Cell about the Worksheet. This movement of the Active Cell determines what activities MaxiPlan performs and in what sequence.

MaxiPlan selects a Range of Cells to accomplish a variety of tasks. For example, before the Fill command can be executed a Range must be selected. Fill is often used to paste a formula over a Range of Cells.

Before a Database criteria can be used, the criteria containing the Database criteria must be selected.

In this Lesson you will learn to:

- Select a Range in the Worksheet with a Macro Function
- Select a particular Cell based on calculations to determine the Column and Row coordinates.

Macro Selection of a Range

The SELECT Macro Function requires either a Cell Address or a Named Range as an argument. Both single Cells or a Range of Cells can be selected. For example:

=SELECT(B4)

Selects the Cell B4

=SELECT(B5:C20)

Selects the Range from Cell B5 to C20 on the Worksheet

=SELECT(Commissions)

Selects the Range named "Commissions"

The SELECT Macro Functions can be used to set the width of Columns C through F to 6.

=SELECT(C1:F1)

=FORMAT(9,2,6)

SELECT can also be used to name a Range

=SELECT(D3:G3)

`=DEFINE.NAME("Sales")`

Names the Range starting at D3 and ending at G3 "Sales"

Certain Select Macro Functions select specific Cells or Ranges.

To select the entire Worksheet use the `SELECT.ALL` Macro Function. The result of the execution of this Macro Function is to select the entire data defined portion of the Worksheet with the Active Cell at A1.

`SELECT.LAST` moves the Active Cell to the bottom right hand Cell of the Worksheet.

`SELECT.ACTIVE` places the Active Cell to the top left hand corner of the displayed window.

Selecting a Cell by Calculation on Rows and Columns

The `SELECT.CR` Macro Function is used to determine a new location for the Active Cell by determining how many Rows or Columns the new location is from the current site of the Active Cell.

`SELECT.CR` has two arguments, an expression to find the Column and another expression to find the Row. The expression to define a Column or Row can be a reference to a Macro Instruction, a reference using the `CELL` Macro Function or a direct statement. Note `SELECT.CR` uses zero "0" to designate the first column or row of the Worksheet. Thus `SELECT.CR(0,1)` would select the cell A2 and `SELECT.CR(4,3)` would select the cell E4.

For example, expressions to find the proper Column and Row on a Sales Forecast could be constructed as follows.

`=IF_GOTO(OR(CELL(0,0) < 2000, CELL(0,0) > 4000), ERROR)`

`=SELECT.CR(2,4)`

This would move the Active Cell to C5, if the contents of current Active Cell fell between 2,000 and 4,000.

Lesson Three:

THE SET AND DEFINE MACRO FUNCTIONS

Another group of powerful Macro Functions is the SET and DEFINE Macro Functions. These are used to establish a condition. The condition may either be to treat a certain Range as a Database or Database Criteria. SET Macro Functions can be used to make the contents of certain Cell on either a Worksheet or Macrosheet a Value based on the results of an expression. They can also be used to establish a Password or Printer Preferences.

In this Lesson you will learn to:

- Assign a Value to a Cell using a SET Macro Function
- Establish a Range as a Database using a SET Macro Function
- Specify a Password with a SET Macro Function
- Describe a Database and Criteria with a Macro Function

Setting Values in Cells with Macros

Two SET Macro Functions are used for assigning values to cells, one for Worksheets and one for Macrosheets. Each utilizes two arguments, the first is a reference to the Cell location, and the second is an expression whose result determines the value to be inserted at the referenced Cell.

=SET.VALUE(ref,expression) is used for Worksheets. A common application for this Macro Function is to do increments. For example,

=SET.VALUE(B3,B3 + 1)

Changes the contents of Cell B3 to the value of B3 plus 1, thus every time this Macro Function is evaluated, it increments the value in B3 by 1.

=SET.MVALUE(ref,expression) performs the same sort of task except on the Macrosheet. For example,

=SET.MVALUE(#A5, =AVERAGE(D4:D10))

Makes the value of Cell A5 on the Macrosheet, the average of the Range (D4:D10) on the Worksheet.

Describing a Database and Criteria with Macros

Since Databases and Criteria Ranges must be specifically characterized as being Databases and Criteria, two Macro Functions are used to establish a Database and a Criteria: DEFINE.DATA and DEFINE.CRITERIA.

Before a Database can be specified, it must first be selected using the SELECT Macro Functions described in Lesson Two. Thus a simple Macro to make a Range a Database would be as follows.

```
=SELECT(C3:E5)
```

```
=DEFINE.DATA("Price List")
```

Database Criteria can be specified by a Macro in a similar manner.

```
=SELECT(CELL(0,1):CELL(3,2))
```

```
=DEFINE.CRITERIA("Find Texas")
```

Name the Range which begins at the Cell in the same Column but down one Row and ending at the Cell three Columns to the right and two Rows down "Find Texas", and treat it as a Database Criteria Range.

Lesson Four:

THE ANALYZE MACRO FUNCTION

ANALYZE is a very powerful Macro Function. It is used to insert a text string into the Active Cell and to cause the evaluation of a formula or expression.

With the ANALYZE function you can perform such tasks as:

- evaluate a formula, and insert it in the Active Cell and display the formula's result in the Active Cell
- simulate user insertion of data, formulas, or text strings into the Active Cell.

In this Lesson you will learn to:

- Use the Conventions for the ANALYZE Macro Function
- Insert a Text String at the Active Cell with a Macro
- Evaluate a Worksheet Formula with the ANALYZE Macro Function

ANALYZE Conventions

When working with the ANALYZE Macro Function there are two rules to remember.

1. The Active Cell must be at the desired position.

Since ANALYZE inserts data at the Active Cell, it must be preceded by Macro Instructions that place the Active Cell at the correct position on the Worksheet. For example, if ANALYZE is used to execute a Worksheet formula that contains Cell References, the Active Cell must be properly positioned to access the referenced Cells. If it is not, the result will either be an incorrect answer or an error message.

2. The argument must be surrounded by quotation marks.

ANALYZE uses text string as an argument. To have an argument treated as a text string, it must be surrounded by quotation marks. If they are not present, then an error message will appear.

Inserting Text Strings

Text Strings can be inserted at a specific location on the Worksheet using the ANALYZE Macro Function. The location can be specified by a Cell Address or Name of a Range with a SELECT function.

For example:

Insert_Text

=SELECT(C1)

=ANALYZE('Unit Sales Projections')

=RETURN

This will result in the insertion of the text string "Unit Sales Projections" in Cell C1 of the Worksheet.

Inserting Formulas in Cells

ANALYZE is used to insert formulas. The formula must be inserted as an argument of the function and it must be surrounded by quotation marks. Many times you will use formulas that require that an initial value be available. To fix a value in a Cell of the Worksheet, you can use the SET.VALUE Macro Function. Then the formula you create with the ANALYZE function can refer to that Cell for the data.

For example:

Insert_Formula

=SET.VALUE(B2,100)

=SET.VALUE(B3,250)

=SET.VALUE(B4,300)

=SELECT(B5)

=ANALYZE(' =SUM(B2:B4)')

=RETURN

When this Macro executes, it first enters data in Cells B2, B3, B4. Then it selects the Cell B5, and inserts the SUM function over the Range (B2:B4) and displays the result 650 in Cell B5.

Lesson Five:

OPENING PROGRAMS AND FILES WITH A MACRO

MaxiPlan Macros can call in files created under other programs and use them in a Macro program. Three types of files can be manipulated by a Macro:

- IFF Format Picture Files
- Files which can be opened with Icons
- Files that can be opened from Amiga's CLI.

There are special Macro Functions for opening each of the different types of files. You should also keep in mind that information from one MaxiPlan Worksheet can be incorporated in another utilizing the Worksheet Function REFER.

In this Lesson you will learn to:

- display pictures from paint programs for a specified length of time
- open files on the Workbench by double clicking on an icon
- open files by name from CLI

Display of IFF Picture Files with a Macro

The SHOW Macro Function is used to display a picture file. SHOW requires that the picture must be an IFF file containing an ILBM picture.

Programs which create IFF files include MaxiPlan, Deluxe Paint, and Impact. Pictures of either Low, Medium, and High resolution can be displayed by SHOW. However, SHOW will not display "Hold and Modify" or "HAM" types of IFF files.

SHOW requires that you also specify the amount of time to display the picture on the screen. Delay time for the display of the picture is incremented in 1/10ths of a second, also known as "delays". For example, 50 delays corresponds to 5 seconds.

Display of pictures with a Macro requires quite a bit of memory. Typically 512K of memory is not sufficient to execute the SHOW Macro Function when a medium size Worksheet is opened. This is one of the reasons we recommend 1 meg of memory when using MaxiPlan Plus.

The SHOW Macro Function has two arguments:

=SHOW('picturename',delaytime)

When calling in the picture, it is not necessary to first open the paint program before using the picture file. However, SHOW does require that 'picturename' be enclosed in quotes. The file name "picturename" must include the name of the disk as well.

SHOW's second argument, delay time is expressed in number of delays. Each argument must be specified correctly in order to display a picture.

For example, to call in the MaxiPlan Chart named QuarterlyProfit saved as an IFF file on the Disk named Budget for 10 seconds, SHOW would be as follows:

```
=SHOW('Budget:QuarterlyProfit',100)
```

You can create a simple Macro which displays a picture as follows.

MacroName

```
=SHOW('picturename',delaytime)
```

```
=RETURN
```

This will display the IFF file format picture designated by "picturename". If you wish to create an IFF file format picture with MaxiPlan, you use the CAPTURE Menu Item on the CHART CONTROL Menu in the Chart Drawing Window. This procedure is explained at greater length in the section of the MaxiPlan manual entitled "Lesson Nine: Charts - Visual Display of Data".

Opening Programs and Files from the Workbench

The EXEC.WB Macro Function enables you to open files from the Workbench which are represented by icons. There are two arguments for the EXEC.WB Macro Function:

'programname' - the name of the program surrounded by quotes

'filename' - the name of the data file for the program which must also be surrounded by quotation marks.

Like the SHOW function, EXEC.WB requires a lot of memory. A 512K system will probably be taxed executing this Macro Function.

EXEC.WB substitutes for double clicking on a file icon on the Workbench. If the program and file are on a floppy disk, the name of the disk must be included in the file name. For example, 'DataDisk:FileName'. Typically if a program is on a floppy disk, the name of the disk is the name of the program. If this is not the case, then the disk name must also proceed the program name. For example: 'ProgDisk:MaxiPlan'.

Opening Programs and Files from CLI

An alternative method for opening programs and files which are not represented by icons on the Workbench is with the special Macro Function EXEC.CLI. This will access a program

by its 'programname' and pass to it a Command Line Interface (CLI) argument. The program name and the CLI argument must each be surrounded by quotation marks.

The third argument of the EXEC.CLI Macro Function is an output file name which must also be surrounded by quotes. When using EXEC.CLI you can use any CLI command as the first argument. Thus you can perform such powerful tasks as copying programs and files, deleting programs and files, as well as opening programs and files.

For more about the Command Line Interface, see the manual which accompanied your Amiga.

An example of a simple Macro which can open an external program follows.

Execute CLI Macro

```
=EXEC.CLI('Textcraft Plus',"",'Outputfile')
```

```
=RETURN
```

If you have Textcraft Plus available in a drive, you can open a blank Textcraft Plus document by running the above Macro.

Lesson Six:

THE IF_GOTO MACRO FUNCTIONS

This family of Macro Functions is used to choose between alternatives. The IF_GOTO Macro Functions have two arguments: the first is a set of compare statements while the second is a Cell reference. If the comparison is true, then the IF_GOTO directs the execution of the Macro to Cell reference given as the second argument. If the comparison is false, then the Macro drops down to the next statement.

In this Lesson you will learn to:

- Formulate the arguments for IF_GOTO Macro Functions
- Build a series of small logical comparisons to execute a complicated decision process.

IF_GOTO Arguments

There are three types of IF_GOTO Macro Functions:

=IF_GOTO is used to compare numeric data

=LIF_GOTO is used to compare case sensitive text strings, i.e. upper and lower case letters must match exactly

=LIF_GOTO2 is used to compare text strings disregarding capitalization.

Each type of IF_GOTO Macro Function has a comparison expression as its first argument. This argument can be simple or incorporate built-in Worksheet Functions. The Second argument, Cell Reference, must be on the Macrosheet. In this case, it is not necessary to use the # sign to signify a Cell Address on the Macrosheet. References for the second argument may be either a Cell Address or as a Label. However, Cell References in the first argument may be either on the Worksheet or the Macrosheet.

For example:

=LIF_GOTO(B4 < 'G',C6)

This would compare the text string in Cell B4 of the Worksheet to see if it was alphabetically before the letter G. If it is, then the Macro moves to Cell C6 on the Macrosheet for the next Macro instruction. Should it fall after the letter G, then the Macro moves on to the next Macro instruction below the LIF_GOTO Macro function.

=IF_GOTO(SUM(Sales) > 200000),#B4)

This would sum the entries in the Named Range "Sales", then see if the sum exceeds 200,000. If it does, then it directs the Macro to look for the next instruction at Cell B4 on the Macrosheet.

Building Decision Models with IF_GOTO Macro Functions

Complicated decision models can often be broken down into a series of one to one comparisons. As an example, if you use a different factor for commissions depending on the sale amount, you can direct the Macro to find the right factor with a series of IF_TOGO Macro instructions.

For example, with the following series of Macro Instructions you can either key in a new response, read your winning score, go back to the start of a game.

Suppose the Macrosheet Cells contain respectively:

#C4: =MESSAGE(1,50,'Congratulations, You Won!')

#D4: =RESPONSE('Do You Want to Continue?','Yes','No')

#E4: =RESPONSE('Do You Want to Start Over?','Yes','No')

Then for a Worksheet which keeps track of the current score in Cell E24 and the highest score in Cell A3, a series of IF_GOTO statements will direct the Macro in any of several directions.

=IF_GOTO(E24 < 30, #E4)

=IF_GOTO(E24 > 30 AND E24 < A3, #D4)

=IF_GOTO(E24 > A3, #C4)

The first IF_GOTO says if the current score is below 30, maybe the player may wish to abandon the game and start over. If it is above 30, the Macro drops down to the next IF_GOTO.

The second IF_GOTO gives the player the opportunity to abort or continue if their score is less than the high score. As long as it is less, they are given this choice.

The third IF_GOTO states that if the current score ever exceeds the highest score saved, it stops the game and displays a message congratulating the player.

Lesson Seven:

HOW TO RECORD A MACRO

MaxiPlan Plus has a special feature which will automatically create a Macro as you go through a series of Worksheet activities. The RECORD Mode writes the Macro so it can be played back or executed later.

When you view a Macro written with the RECORD Mode, it will look like a regular Macro. It will be a series of Macro Functions with arguments filled in as they are written.

In this Lesson you will learn how to:

- Write a Macro by simply recording Worksheet actions
- Execute a Pre-recorded Macro
- Extend or Edit a Pre-Recorded Macro.

Recording a Macro

In order to record the Macro, a Macrosheet must be open to accept the instructions. The Macrosheet can be either an existing Macrosheet or a new Macrosheet.

Since all Macros are named, before you can begin the Recording process, you must key in a name for the Macro in the Column on the Macrosheet where the Macro is to be written.

With the Active Cell of the Macrosheet still at the Cell with the Macro Name, pull down the MACROS Menu and select SET RECORDER. This alerts MaxiPlan that a Macro is being written.

Leaving the Macrosheet open, you open either a blank Worksheet or an existing Worksheet in the manner described in the section of the manual entitled "Lesson One: Opening, Saving, and Closing Worksheets".

Once you are at the Worksheet, selecting START RECORD on the MACROS Menu on the Worksheet will begin the automatic Recording process. Before beginning the Record process, you should decide if you want Cell References in the recorded Macro to be Absolute or Relative. The RECORD MODE Menu Item has two Submenu Items for selecting between ABSOLUTE and RELATIVE. The default mode is relative. For further details on Absolute and Relative Cell References turn to the section of this Manual entitled: LESSON FOUR: CREATING FORMULAS.

The steps to RECORD in brief are:

select the desired Macrosheet (or use a new Macrosheet if none exists)

select the starting Cell for the Macro on the Macrosheet (normally Row 1)

enter the name of the Macro you have chosen (i.e. enter a Label in the starting Cell)

select START RECORDER from the Macros Menu (this will automatically add the recorded Macro to the Macro Name Selector window)

select the Worksheet on which you wish to operate

pull down the MACROS Menu and select RECORD MODE, and then choose between either ABSOLUTE or RELATIVE

pull down the MACROS Menu and select SET RECORDER

Now each action you take on the Worksheet will be entered as a Macro Instruction on the Macrosheet.

You should plan your actions you wish to take while you are recording before you begin so that you use the fewest number of steps to accomplish the task. This will result in a smaller Macro and less consumption of memory.

After you have performed all the actions you wish to Record, select STOP RECORD on the MACROS Menu.

Executing a Pre-recorded Macro

To RUN a pre-recorded Macro, you follow the same steps to execute a keyed in Macro:

- select a spot on the Worksheet to execute the Macro
- pull down the MACROS Menu
- select the RUN Menu Item
- select the Name of the Macro in the Selector window.

Alternatively, a Macro can be executed by

- pressing the CONTROL Key with the letter R

This then causes the Cell Contents Display to become "Run What?"

- Key in an approximation of the Macro Name
- press RETURN Key

The Macro Selector window will be displayed listing the closest Macro Name.

- select the Macro Name in the Selector window.
- click on the OK button

To actually Record a Sample Macro using RECORD, follow the steps below. In this example we will open a Worksheet which contains a Range devoted to the Records of a Database. The Macro will sort the data and output the newly sorted data to the printer.

1. On the Utility/Data disk included with MaxiPlan Plus is a selection of Worksheets. Insert the Utilities/Data Disk into the external drive known as DF1. If you do not have an external drive, insert the disk into your internal drive known as DF0. From the Control Window open up the desired Worksheet by pulling down the Control Menu and then clicking on the command OPEN WORKSHEET with the right button of the mouse.
2. This will bring up a Requester Window. Click on DF0 or DF1 whichever is appropriate with the right button of the mouse.
3. This will bring up a list of file names in the DF1 or DF0 directory. Double Click on the file name INVOICE.DATA. This will open up the desired Worksheet file.
4. Open up a New Macrosheet from the Control Menu of the Worksheet.
5. Select cell #A1 of the Macrosheet, key in PRINT.DATA
6. With the cell #A1 still selected, pull down the Macros Menu and select SET RECORDER. This adds the Macro name "PRINT.DATA" to the directory of Worksheets and Macrosheets.
7. Now return to the Worksheet using the active window switcher in the upper right-hand corner of the Macrosheet. Click on the left-hand switcher with the left mouse button.
8. Observe your Worksheet and plan the steps you will take to accomplish your task in the Worksheet.
9. Move the Window on the Worksheet such that the upper left-hand cell on the screen is cell A30
10. With this section of the Worksheet in view, move the cursor to cell A34. You are now ready to record a Macro which will set up a database.
11. To turn Recorder on, pull down the Macros Menu and select START RECORD. Now all of your actions in the Worksheet are automatically recorded and turned into Macro instructions on the Macrosheet.
12. Pull down the Data Menu and select the command SELECT DATA RANGE with the right mouse button.
13. A Requester Box will appear on the screen listing the Named Ranges, click on the name "DATABASE" and then click on the OK Button with the left button of the mouse.
14. Pull down the Data Menu and select the command SELECT CRITERIA with the right button of the mouse.
15. A Requestor Box will appear on the screen listing the pre-defined sort criterion. Click on "SORTCRIT", and then click on the OK Button with the left button of the mouse.

16. Pull down the Data Menu and select the command SORT by clicking with the right mouse button.
17. To select the range for printing, move the Pointer and highlight the Range A34:C46 with the left button of the mouse.
18. Pull down the Project Menu and select PRINT and then PRINTER on the Submenu. If you do not have a printer attached to your computer, select FILE on the Submenu.
19. Pull down the Macros Menu and select STOP RECORD to end the recording of the Macro.

You will then return to the Macrosheet where you will see the Macro name PRINT.DATA in the first cell, followed by the instructions or formulas making up the Macro. The display on the screen should be as shown below.

```
=SELECT.DATA(DATABASE)
=SELECT.CRITERIA(SORTCRIT)
=SELECT.SORT
=SELECT(CELL(0,0))
=SELECT(CELL(0,0):CELL(2,12))
=PRINT(0)
=RETURN
```

Editing a Pre-recorded Macro

Once a Macro has been recorded, it can be edited by again using the Record Mode. By placing the Active Cell of the Macrosheet at a Cell that is a Label, MaxiPlan assumes it is Macro Name and thus begins recording and inserting Macro Instructions at that point on the Macrosheet when SET RECORDER is executed.

If the Active Cell is moved to one of the Macro Instructions, the Macro will instead begin recording at that point. When you turn off Record Mode, a RETURN Macro Function is automatically inserted at the end of the Recorded Macro.

Lesson Eight:

AUTOMATIC MACROS

An Automatic Macro will execute every time you open the Macrosheet containing the Automatic Macro. Automatic Macros can be used to open and format a new Worksheet, load in lookup tables, Formulas, and Cell Notes, or even print a report.

In this Lesson you will learn to:

- properly define an Automatic Macro
- develop applications for Automatic Macros

Defining and Executing an Automatic Macro

In order for an Automatic Macro to properly execute, the Automatic Macro must:

be named AUTOMATIC, and

begin at Cell Address A1 of the Macrosheet (i.e. the Macro Name AUTOMATIC must be in Cell A1).

To execute an Automatic Macro, you open the Macrosheet containing the Automatic Macro. As you open the Macrosheet, the Automatic Macro will execute, rather than having to evoke the Macro with either the RUN Menu Item on the MACROS Menu or the Control Key with the letter R Key.

Applications for Automatic Macros

Automatic Macros are best used to execute frequently accessed Macros. For example, if you run a certain report on a daily basis such as a Call Report, an Automatic Macro can be created to format the report, set printer controls, and execute the output of the report.

Another application is to execute a complex analysis on a set of data. For example, if you use MaxiPlan as a database to keep track of such data as experiment results, stock prices, or inventory changes; an Automatic Macro can be written which will perform calculations on the data at any time. Thus you can know if there have been any significant changes in your data at any time.

Lesson Nine:

CUTTING AND PASTING BETWEEN WORKSHEETS

Macros can be designed to either Cut, Copy, Paste or Fill between Worksheets. To accomplish these tasks, three special functions are used to identify the Worksheets and direct the Macro to a specific Worksheet to find selected Ranges.

The three Macro Functions are:

=WKS.ID(no argument)

=SELECT.WKS(WKS.ID#)

=SWAP.WKS()

In this Lesson you will learn to:

- Use the three special Macro Functions for exchanging data between Worksheets
- Create a Macro to Copy a Range of Data from One Worksheet and Paste it onto a Second Worksheet with a Macro.

Using WKS.ID Macro Function

When this Macro Function is executed, its effect is not normally visible on the Worksheet or Macrosheet window. It returns to the location on the Macrosheet where the WKS.ID macro instruction is located an internally generated identification number for the Worksheet that is currently active. Thus when constructing a Macro using the WKS.ID Macro Function, it must be preceded by a Macro Instruction which opens the Worksheet, if necessary.

The number assigned to a Worksheet is not saved or used in any way to identify or locate the Worksheet. It simply is assigned to a particular Worksheet during that particular execution of the Macro. As the Macro executes, MaxiPlan assigns the number "0" to the first Worksheet opened by the Program. If a second Worksheet is opened it is assigned the number "1", a third would be assigned "2", etc.

You can see the numbers assigned by the Macro to opened Worksheet, if you select the SHOW Menu Item on the OPTIONS Menu of the Macrosheet and then select the VALUES Submenu Item. At each Cell containing the WKS.ID macro instruction, you will displayed the identification number for the proceeding open and active Worksheet.

Since the Macro cannot predict the order that Worksheets are opened, you should use the WKS.ID function to assign a number each time the Macro is executed.

Using SWAP.WKS Macro Function

SWAP.WKS makes a substitute Worksheet the Active Worksheet. In order to execute SWAP.WKS, two Worksheets must be open.

SWAP.WKS has no arguments, it switches the active Worksheet between the two available Worksheets. Thus whenever it is executed, it makes the non-active, open Worksheet the active Worksheet.

Using SELECT.WKS Macro Function

Rather than switching Active Worksheets, the SELECT.WKS Macro Function chooses the indicated Worksheet as the Active Worksheet. SELECT.WKS Macro Function uses either the identification number or the Cell Address on the Macrosheet containing the WKS.ID for the desired Worksheet as its argument. Thus SELECT.WKS can be specified as either:

=SELECT.WKS(WKS.ID#),or

=SELECT.WKS(Macrosheet Cell Address of WKS.ID Function for the Worksheet to be selected).

Sample Macro for Cutting and Pasting between Worksheets

Below is an example of how to execute a Cut and Paste between Worksheets. To see the actual execution, insert the Data/Utilities disk which accompanies MaxiPlan Plus in the internal disk drive designated DF0.

Cut_and_Paste

Name of Macro

=OPEN.WKS('DF0:Worksheets/JANUARY PIPELINE')

Opens first Worksheet

=WKS.ID

Assigns identification number of 1

=OPEN.WKS('DF0:Worksheets/consolidated')

Opens second Worksheet

=WKS.ID

Assigns identification number of 2

=SELECT.WKS(1)

Makes first Worksheet the Active Worksheet

=SELECT(C4:C7)

Selects the Range (C4:C7) on the Worksheet

=COPY

Copies the selected Range to the Clipboard

=SWAP.WKS

Substitutes the second Worksheet as the Active Worksheet, since Worksheet #1 is active.

=SELECT(A8)

Selects the Cell A8 on the second Worksheet

=PASTE

Pastes the contents of the Clipboard at the Active Cell of the second Worksheet

=RETURN

Ends the execution of the Macro

After the above Macro instructions are entered, select the Cell on the Macrosheet with the name of the Macro, pull down the MACROS Menu and select the SET RECORDER Menu Item. This saves the macro instructions.

When this Macro is executed, you will see the first Worksheet opened and loaded into the program, then the second opened and loaded, followed by the selection of the Cell A8 on the second Worksheet and pasting of the contents of the Cells in the Range (C4:C7) from the first Worksheet at Cell A8 of the second Worksheet.

Lesson Ten:

SUBROUTINE MACROS

When a Macro is executing it can be directed to execute another Macro. This is particularly useful if you need choose between alternative analysis or if you have created a collection of Macro Functions which are repeatedly used in various Macros you create.

A Subroutine Macro can be specified anywhere on the Macrosheet, but it is usually best to select a Cell Address for the beginning of the Subroutine Macro which is either easily remembered or readily available for review when the Macrosheet is open.

In this Lesson you will learn to:

- Correctly specify a Subroutine Macro
- Use a Subroutine Macro within a Macro.

Specifying a Subroutine Macro

A Subroutine Macro has the same format as a regular Macro:

- begins with the Macro Name
- instructions are expressed as a set of Formulas
- ends with the Macro Function "RETURN".

Two methods are available for directing the execution of a Macro to a Subroutine Macro:

- using the CALL Macro Function, or
- naming and storing the Subroutine Macro and selecting it from the Macrosheet Name Selector.

The argument for CALL is always a Cell reference or location on the Macrosheet. The reference can be indicated by either an actual Cell Address, the Name of a Range, or label.

MaxiPlan allows a Subroutine Macro to "Call In" another subroutine Macro using the CALL Macro Function. However, MaxiPlan does impose a maximum of 15 levels of nesting of Subroutine Macros.

Note: CALL is differentiated from GOTO in that it is used to reference a Cell on the Macrosheet and after executing a Subroutine Macro will return to the main Macro at the next instruction below the CALL instruction. GOTO is used to direct the Macro to a Cell Address on the Macrosheet as well, but once there it must be directed to a new site, it will not automatically return the Macro execution to the main Macro.

If you choose to evoke the Subroutine by its Macro name, MaxiPlan will automatically direct the execution of the Macro to Cell on the Macrosheet with the Macro Name and then begin executing each instruction in turn.

Subroutine Macros can be created with the RECORD Mode. They must be saved using the SET RECORDER Menu Item on the Macros Menu and can be executed directly via the RUN command or Control Key with the R Letter Key. Testing the Subroutine Macros will before incorporating them into other Macros will ensure they do not interrupt the execution of your Macros.

Example of a Subroutine Macro

Suppose you regularly make up Worksheets with numbered Rows. The following Subroutine Macro which will automatically number the Cells in a Column for the exact number of Rows you need in the Worksheet. It looks at a scratch Cell at B1 of the Worksheet to find the number of Rows to be numbered.

A

+-----+

1 RowNumbers

Name of the Macro

2 =SELECT(A6)

Moves the Active Cell to A6 on the Worksheet

3 =SET.VALUE(A6,1)

Sets the Value of A6 to 1.

4 DOWN(1)

Moves the Active Cell down one Row

5 LOOP

This is a tag for the Macro, a be referred to later.

6 SET.VALUE(CELL(0,0),(CELL 0,-1)+1)

This sets the value of the current Cell to be the value of the previous Cell plus 1.

7 =DOWN(1)

Moves the Active Cell down one Row

8 =IF_GOTO(CELL(0,-1)<B1,'LOOP')

Having just moved down one Row, the Macro looks back at the Cell it just changed which is now one Row up and compares it to the scratch Cell B1 on the Worksheet where you key in the total number of Rows to number. As long as it is less than the total number, it returns to the spot on the Macro called "LOOP". That is the If expression is true, then it goes to a site on the Macrosheet. When it equals or exceeds B1, then it drops down to the next Macro instruction.

9 =RETURN

Ends the execution of the Macro.

Lesson Eleven:

HOW TO DEBUG A MACRO

When writing a Macro, you may create instructions which are inexecutable. You have three tools to help you decipher which instruction, or Macro formula, causes the Macro to fail:

- STEP Function
- Viewing the Macrosheet in Value Mode
- FOLLOW Function

Each of these tools can be activated by a pull down Menu command on the Macrosheet. STEP and FOLLOW are under the Macros Menu while the Value mode is under the Options Menu under the SHOW command. In addition, STEP and FOLLOW functions can be written into a Macro as instructions or formulas. When STEP and FOLLOW are selected under the Macro Menu, the entire Macro will execute according to the respective commands. Wherever the STEP or FOLLOW function are inserted in the Macro, the Macro will execute by their guideline from then on until it meets another STEP or FOLLOW function.

STEP Function

=STEP(opt)

STEP causes the Macro to execute in the Worksheet step by step, while displaying the Title Bar the next instruction of the Macro. To start the execution of the next instruction, you press the space bar. Thus the Macro executes at the speed you dictate by pressing the space bar. Whenever an error occurs, the error will be displayed in the window. The user has the option to make the Macro continue to operate at regular speed by simply pressing the Escape (ESC) Key.

Options for STEP function

0 - Ignore STEP function and execute Macro at regular speed.

1 - Any non-zero answer causes the Macro to execute one instruction at a time and display the errors.

We suggest you include the STEP function as the first formula or instruction of your Macro. By maintaining the parameter at non-zero "1", every time you execute the Macro it will execute in a step fashion. Once it is finally debugged, you can then switch the parameter to zero "0" and it will execute normally.

Value Mode

The SHOW command on the Options Menu toggles between displaying either values or formulas on either the Worksheet or the Macrosheet. The normal mode for the Macrosheet is to display formulas, while the normal mode for the Worksheet is to display values.

When debugging a Macro it is helpful to display the Macrosheet in the Value mode. In the Value mode, the results of an incorrect instruction are displayed as ERROR. Under the Value Mode, whichever cell is displaying the word ERROR will contain a faulty formula. As an example, if a Macro instruction results in a division by zero, in the VALUE mode that instruction or formula will display ERROR.

FOLLOW (opt) Function

FOLLOW displays the actual movements of the cursor, highlighting of ranges, insertions or deletions of Columns and Rows, and any other visual displays of the Macro working on the Worksheet. When FOLLOW is on, the speed of execution of the Macro is dramatically slowed, but it allows you to see exactly the effect of your Macro instructions have on the Worksheet. For example, if you wrote a Macro to format a Worksheet, you would see each column width set, each column and row heading text inserted, etc.

Options for FOLLOW function

- 0 - All visual effects on Worksheet are hidden.
- 1 - All visual effects on Worksheet are displayed.

None of these tools is entirely foolproof for debugging your Macros. However, if they are used together, nearly all of the reasons for a Macro failing will be revealed. Below is a check list of common errors:

- **Incorrect Syntax** - such as missing quotes.
- **Misspelling of Macro statement**
- **Extra spaces within statements**
- **Incorrect references to ranges**
- **Confusing Macro functions** - such as the various SELECT functions.
- **Using named references without surrounding them with quotes.**

Lesson Twelve:

DOCUMENTING MACROS

As you are writing Macros, it is useful to include notes explaining what is happening at which point in the Macro instructions. These comments can be inserted as text labels between Macro instructions, or as comments in the Column of the Macrosheet next to the instruction.

In this Lesson you will learn to:

- Insert explanatory comments in your Macro programs
- Name Macros to reflect their application

How to Use Comments

Throughout the section of the manual discussing Macros, there have been brief sample programs included as illustrations. Usually each instruction or Macro Function of a Macro was followed by a comment to explain its purpose in the Macro.

When you are developing Macros, MaxiPlan allows you to insert text or labels between Macro Functions or instructions. These comments will not effect the way the Macro executes. Instead, they help you keep track of what each Macro Function is doing as the Macro executes.

Comments can also be inserted in an adjacent Cell in the next Column. However, since the Macro must not have any blank Cells, the comments entered in the next Column will probably be limited to one Row. Those inserted below the Macro Function can take up several Rows if necessary.

Naming Macros

It is best to use a Macro Name that indicates what it accomplishes. If a Macro formats a Worksheet for a monthly budget report, a name like Budget_Rpt_Formt will let you know what to expect when the Macro is executed.

Macro names are constrained to 16 characters, like any other named MaxiPlan object. Once a Macro is saved using the Set Recorder command on the Macros Menu while the Active Cell of the Macrosheet is at the site of the Macro name. The Macro will be listed on the Macro Name Selector which is displayed every time you execute RUN on the Macro Menu or press the Control Key with the letter R Key.

Chapter 25

MACRO FUNCTION REFERENCE

Project Menu Macro Functions

=NEW.WKS()

Create a new Worksheet and make it the "current" Worksheet. This is most often used in an "AUTOMATIC" Macro (see below)

=OPEN.WKS("name")

Open the named Worksheet and make it the "current" Worksheet. This is most often used in "AUTOMATIC" Macro (see below).

Example:

=OPEN.WKS('MaxiPlan Data:Worksheets/a_demo')

=CLOSE.WKS(saveopt)

Action equivalent to selecting Close Worksheet on the Project Menu. The parameter (saveopt) is optional and if omitted or has a value of 0 the Worksheet is not saved. If (saveopt) is non-zero then the Worksheet is saved back to the disk only IF CHANGES HAVE BEEN MADE to the Worksheet contents.

=SAVE()

Save the current Worksheet, overwrite existing file for the Worksheet

=SAVE.AS("name")

Save the current Worksheet under the new "name" and also keep the current Worksheet under its original name as well.

Example:

=SAVE.AS('MaxiPlan Data:Worksheets/a_demo')

=PRINT(opt, "string")

Output current Worksheet to destination dictated by the options for this function. The text in the quotes dictates either a Port on the computer, or a file name.

Options for PRINT Function

0 - to Printer (second operand not needed)

1 - to file named by "string"

The filename or "string" can be an operating system name such as PRT:, SER: or PAR:. This will send output to either the printer, serial port or parallel port respectively.

Examples:

=PRINT(0)

Output directly to Printer

=PRINT(1, "SER:")

Output to serial port

=PRINT(1, "MY FILE")

Output to file named "My File"

=PRINT(A3, "MY FILE")

If A3 is 0, output directly to Printer. If A3 is non-zero output to file named "My File"

Note: The A3 reference here is to cell A3 on the Worksheet. To refer to cell A3 on the Macrosheet you must use "#".

=PRINT(#A3, "MY FILE")

=PRINT.SETUP(opt)

Select print options using the option encoded number. You can set more than one option in a single call to PRINT.SETUP by listing the option numbers and separating them by plus signs.

Options for PRINT.SETUP Function

0 - All options off

1 - File Name

2 - Title

4 - Date/Time

8 - Row/Col Headings

16 - Grid Lines

32 - Page Number

Examples:

=PRINT.SETUP(1) *Filename appears on Output*

=PRINT.SETUP(8+4+32) or =PRINT.SETUP(44)

Both result in Output with Page Numbers, Row and Column Headings, Date and Time of Output

=PRINT.TITLE("string")

Prints specified title for Worksheet when printed

Example:

=PRINT.TITLE("Statement for 1989")

Edit Menu Macro Functions

=CUT()

Cut current selection to clipboard

=COPY()

Copy current selection to clipboard

=PASTE()

Paste from clipboard to range denoted by the active cell

=PASTE.DATA()

Paste only the data, not its format from clipboard to range denoted by the active cell

=CLEAR()

Clear both data and format from the current selection

=CLEAR.DATA()

Clear only data from the current selection; leave format

=DEFINE.NAME("name")

Associate name with the current Range selection; redefine if necessary. The name must be in quotes:

Example:

=DEFINE.NAME("MYRANGE")

=DELETE.NAME(name)

Remove name of a Range from the name directory.

Example:

=DELETE.NAME("MYRANGE")

The Named Range "MYNAME" must appear in quotes. It will now be removed from the list of Named Ranges.

Format Menu Macro Functions

=FORMAT(Main,Opt1,Opt2)

Set display format for the current selection. Opt1 and Opt 2 are optional parameters which need not be present if not required

Options for FORMAT Function

Main	Opt 1	Opt 2
0 - GENERAL		
1 - CURRENCY		
2 - FIXED		
3 - DATE		
	0 - DD-MMM-YY	
	1 - DD-MMM	
	2 - MMM-DD	
4 - TIME		
5 - PERCENT		
6 - DEC. PLACES		
	0 - 9 decimal places	
7 - COMMAS		
	0 - On	
	1 - Off	
8 - PEN COLOR		
	0 - 7 Colors	
9 - WIDTH		
	0 - Standard	
	1 - Wide	
	2 - Specify	Key in 1 to 67 as third option
10- ALIGNMENT		
	0 - Default	
	1 - Left	
	2 - Center	
	3 - Right	
11- STYLE		
	0 - Normal	
	1 - Bold	
	2 - Underline	
	3 - Italic	
12- PROTECT		
	0 - No	
	1 - Yes	

Note: The FORMAT function option "PROTECT" turns protection on or off for a selected cell or range. In order for protection to be available, the master switch governing protection of cells must be toggled on. The Macro function which is the master switch is the Option Menu Equivalent function PROTECTION.

Options Menu Macro Functions

=SHOW.VALUES()

Set all formulas to display as values

=SHOW.FORMULAS()

Set all formulas to display as formulas

=CELLNOTE.DISPLAY(opt)

Select type of output for Cell Notes.

Options for CELLNOTE.DISPLAY Function

0 - Off

1 - Text Only

2 - Speech Only

3 - Text and Speech

=WORDSTAR(opt)

Enable/Disable Wordstar control keys

Options for WORDSTAR Function

0- On

1- Off

=PROTECTION(opt)

Enables/Disables cell protection for entire Worksheet. Cells which have been Formatted with Protect will not be protected if option "1" is used with the PROTECTION function. In order for cells to be protected, both the PROTECTION function must be on and the cell must be formatted to be protected.

Options for Protection Function

0 - Enabled

1 - Disabled

=FREEZE.TITLES(opt)

Freeze Horizontal and/or Vertical Titles

Options for FREEZE.TITLES Function

0 - None

1 - Horizontal (Above Row)

2 - Vertical (Column to Left)

3 - Both

=KEY.ECHO(opt)

Enable/Disable spoken repetition of key strokes

Options for KEY.ECHO Function

0 - On
1 - Off

=GRID(opt)

Enable/Disable grid lines on Worksheet screen
Options for GRID Function

0 - On
1 - Off

=RETURN.KEY(opt)

Dictates the direction the Active Cell moves when the Return Key is pressed.
Options for RETURN.KEY Function

0 - Moves Down
1 - Moves Right
2 - Doesn't Move

=CALC.ORDER (Opt)

Action equivalent of the Calculation Order item from the Options Menu.
Options for CALC.ORDER Function

0 - Natural
1 - Rows
2 - Columns

=SET.PASSWORD (password-string)

Action equivalent of the Specify Password item from the Command Menu.

Example:

=SET.PASSWORD('DONOTPEEK')

Password Must be in quotes.

Command Menu Macro Functions

=SELECT.ALL()

Selects all Cells and makes A1 the Active Cell.

=SELECT.LAST()

Selects bottom right most Cell of active Worksheet.

=SELECT.ACTIVE()

Brings Active Cell to top left of the display window.

=SELECT(cell-ref)

Selects Cell or Range noted by "cell-ref".

Examples:

=SELECT(A1)

Selects the Cell A1

=SELECT(A5:B15)

Selects the Range from Cell A5 to Cell B15 in the Worksheet

=SELECT("MYRANGE")

Selects the Named Range "MYRANGE"

=SELECT(B6:E12)

=DEFINE.NAME("MYRANGE")

Selects the Range B6:E12 in Worksheet and names it "MYRANGE"

=CALCULATE(OPT)

Selects calculation mode.

Options for CALCULATE Function

0 - Automatic

1 - Manual

2 - RECALCULATE NOW!

=CELL.NOTE(delay)

Display or Say Cell Note (if any). Any "delay" is optional. If "delay" is specified, e.g. **=CELL.NOTE(50)** it represents that number divided by 10 seconds to wait after display of the Cell Note before automatically removing the Cell Note from the window. When delay is used the user cannot click on the OK button. The delay is calibrated in 1/10ths of a second. For example, **CELL.NOTE(100)** is displayed for 10 seconds.

=INSERT.ROW()

Inserts a Row or Multiple Rows.

=INSERT.COL()

Inserts a Column or Multiple Columns.

=DELETE.ROW()

Deletes a Row or Multiple Rows.

=DELETE.COL()

Deletes a Column or Multiple Columns.

=FILL.DOWN()

Fills "down" in the current selected Range.

=FILL.RIGHT()

Fills "right" in the current selected Range.

=READ.RANGE()

Reads the selected Range aloud.

=EZ.SORT(opt)

Executes a quick sort based on the contents of the Cells in the first Column of a selected Range.

Options for EZ.SORT function

0 - ascending

1 - descending

Note: Before executing the EZ.SORT Macro function, you must first select a Range for sorting.

FORM.FEED

Executes a Form Feed to bring printer output to the top of the next page of paper.

Data Menu Macro Functions

=DATA.FIND()

Begins Find process for current Database and Find Criteria. If none of the Records match the Criteria, the Cell containing this function has a value of 0. Once you have "found" a Record the first Cell of this Record is now the Active Cell and can be referenced as CELL(0,0).

Example:

	A
5	=SELECT.DATABASE('LIST') <i>Selects the database named "LIST"</i>
6	=SELECT.CRITERIA('JONES') <i>Selects the criteria for a find named JONES.</i>
7	=DATA.FIND()

Starts the process to find Records based on the criteria established in instruction A6 on the Database defined in instruction A5. Returns a value of "0" if no match is found. The Active Cell then becomes the Cell where the first matched record is found.

8 **=IF_GOTO(#A7=0,#A20)**

This evaluates the results of the previous instruction. If no match is found, then the contents of #A7 is zero, thus the Macro is instructed to turn to the instruction in Macrosheet Cell #A20. If a match is found, the value is the Active Cell's contents.

=FIND.NEXT()

Advances to next matching Record. If none available the Cell containing this function has a value of 0.

=FIND.PREV()

Advances to previous matching Record If none available the Cell containing this function has a value of 0.

=EXTRACT.ALL()

Performs Data extract function. Copies selected Records to a new area of the Worksheet.

=EXTRACT.UNIQUE()

Performs Data extract function except each Record matching the select criteria must be approved to be pasted into a new area of the Worksheet.

=DELETE.SINGLE()

Deletes the current single Record from the Data Range

=DELETE.MATCHING()

Deletes all matching Records from the Data Range

=DEFINE.DATA("name")

Sets the selected Range to a Database called "name". You must put the name in quotes.

Example:

=SELECT(D4:H8)

=DEFINE.DATA("DATABASE")

=DEFINE.CRITERIA("name")

Sets the selected Range to a Database Criteria called "name". You must put the name in quotes.

Example:

=SELECT(G1:H2)

=DEFINE.CRITERIA("SORTCRIT")

=SELECT.DATA("name")

Makes the Database "name" the active Database for manipulating Records through either Sort, Extract, Delete, or Find. The Database name need not be surrounded by quotes.

=SELECT.CRITERIA("name")

Makes the Database Criteria "name" the active Database Criteria. You must select a Database as well before either Sort, Extract, Delete, or Find can be executed. The Criteria name need not be surrounded by quotes.

=SORT()

Sorts the current Database Range as specified by the current Criteria.

=SAVE.DATA("name")

Saves either current Database Range or selected Range as text to file "name". Overwrites any existing file.

=LOAD.DATA("name")

Loads file "name" into Cells beginning with Active Cell.

Non-Menu Action Macro Functions

Macro functions in this category emulate Worksheet activities that are not initiated by accessing a Menu. For example, movement of the Active Cell with arrow keys and inserting values in Cells. Like the Menu Equivalent Macro Functions, they replicate activities you perform with MaxiPlan.

The following functions insert data in Cells.

=SET.VALUE(ref,expression)

Only operates on a Worksheet. Sets the value of "ref" to equal the results of "expression". "ref" is either a Cell Address or the Name of a one Cell Range on a Worksheet.

=SET.MVALUE(ref,expression)

Only operates on a Macrosheet. Performs the same activity as SET.VALUE on Worksheets, that is it inserts the results of the "expression" at the Macrosheet "ref".

Examples:

=SET.VALUE(B3,5)

Set Worksheet Cell B3 to equal 5

=SET.VALUE(B3,B3+1)

Sets Worksheet Cell B3 to its old contents + 1

=SET.MVALUE(#B5,#B5+4)

Set Macrosheet Cell B5 to its old contents + 4

=SET.VALUE(B6,#A10)

Sets Worksheet Cell B6 to the value in Macrosheet Cell A10

The following function is used to insert a formula or a text string in a Worksheet at the current Active Cell. Usually the Active Cell is determined by one of the SELECT Macro Functions.

=ANALYZE("string")

Sets contents of Active Cell to "string". If string is a formula, it evaluates the formula. To insert a formula you must precede it with an equal sign. If the "string" is text, this function will insert the text into the Active Cell.

Examples:

=SELECT(C3)

Make Cell C3 the Active Cell

=ANALYZE('32')

Insert the number 32 in the Active Cell of the Worksheet.

=ANALYZE(=SUM(B3:B9))

Inserts the sum of the range B3:B9 at the Active Cell on the Worksheet.

=SELECT.ACTIVE

Positions widow such that the Active Cell is in the top left corner of display.

=SELECT.LAST

Selects bottom right most Cell of Active Worksheet as the Active Cell.

The following Functions are used to move the Active Cell about the Worksheet in the same manner as using the Arrow or Cursor Keys.

=UP(n)

Causes the Active Cell to move up "n" Rows like the Up Arrow Key.

=DOWN(n)

Causes the Active Cell to move down "n" Rows like the Down Arrow Key.

=LEFT(n)

Causes the Active Cell to move left "n" Columns like the Left Arrow Key.

=RIGHT(n)

Causes the Active Cell to move right "n" columns like the Right Arrow Key.

=FIRST.COL

Causes the Active Cell to move to the left most Cell in the Row with an entry like the action of Right Arrow Key with Shift Key.

=LAST.COL

Causes the Active Cell to move to the right most Cell in the Row with an entry like action of Left Arrow Key with Shift Key.

=FIRST.ROW

Causes the Active Cell to move to the top most Cell in the Column with an entry like the action of Up Arrow Key with Shift Key.

=LAST.ROW

Causes the Active Cell to move to the bottom most Cell in the Column with an entry like the action of the Down Arrow Key with Shift Key.

The following Function creates a new directory and an Icon to represent the directory.

=MAKE.DRAWER (drawer-name-string)

Creates a new Directory (Drawer) and if present, copies the file SYS:EMPTY.INFO to create an Icon for the Drawer.

CONTROL FUNCTIONS

Macro Control Functions direct execution of the Macro itself, rather than performing a visible action in the Worksheet. They are used to debug the Macro, create conditional branching, bring in outside files such as a picture, display a message, allow user input of text and data, and determine special variables such as type data in a Cell and Row and Column Size of a selected Range.

The following functions are used for debugging a Macro.

=FOLLOW(opt)

Allows visual display of the results of Macro functions on the Worksheet. Ranges are highlighted, Menus are pulled down, columns inserted, text keyed in, etc. It is used for debugging a Macro as described in the section of this manual entitled "HOW TO DEBUG MACROS".

Options for FOLLOW Function

- 0 - Visual effects are not displayed
- 1 - Visual effects are displayed

=STEP(opt)

This Macro function allows the Macro to execute one instruction at a time. The user controls the rate of execution of the Macro by pressing the Space Bar between execution of instructions. To return to the normal mode, press ESC.

Options for STEP Function

- 0 - Normal speed of execution
- 1 - Executes one instruction at a time

The following functions are used for branching during the execution of a Macro. They evaluate an "expression" using comparison operators, and if it is true the Macro branches to new location on the Macrosheet indicated by the second argument "ref". If it is false, the Macro executes the next instruction in the Macro.

Allowable comparison operators are:

- = Equal
- <> Not Equal
- < Less Than
- > Greater Than
- <= Less Than or Equal
- >= Greater Than or Equal

=IF_GOTO(expression,ref)

Compares Cells containing numeric type data in the 'expression'. If the comparison is true, then the Macro branches to the location at "ref" on the Macrosheet to look for more instructions to execute. Otherwise the Macro drops down to the next instruction.

=LIF_GOTO(expression,ref)

Compares Cells containing text or label type data in the "expression" where upper and lower case letters must match exactly. If the comparison is true, then the Macro branches to the location at "ref" on the Macrosheet. Otherwise the Macro drops down to the next instruction.

=LIF_GOTO2(expression,ref)

Compares Cells containing text or label type data where the comparison strings where the case of the letters need not exactly match. If the comparison is true, then the Macro branches to the location at "ref" on the Macrosheet.. Otherwise the Macro drops down to the next instruction.

The "expression" must take the following form:

< cell-reference > < operator > < string >

where cell-reference in the expression can be either on the Macrosheet or the Worksheet.

The second argument "ref" must be a location on the Macrosheet in order to execute a set of Macro instructions if the expression is true.

Examples:

=LIF_GOTO(B3 < "G",#A9)

If the expression is "True", that is if the contents of cell B3 are alphabetically before the letter "G", then go to cell A9 of the Macrosheet. If the expression is "False", then drop down to the next Macro instruction.

Example: Count from 8 down to 2 using cell B10 on the Worksheet. Macro appears in Column A of Macrosheet, Rows 1-5.

	A
	+-----+
1	MYMAC Name of Macro
2	=SET.VALUE(B10,8) Set Value of Cell B10 of Worksheet to 8
3	=SET.VALUE(B10,B10-1) Set Value of Cell B10 to the Contents of B10 minus 1
4	=IF_GOTO(B10>2,#A3) If contents of B10 is greater than 2, then go to Cell A3 of the Macrosheet. If it is not greater than 2, then drop down to next Macro instruction.
5	=RETURN End Macro and return to Worksheet

=GOTO(ref)

Directs the execution of the Macro to the "ref" on the Macrosheet. The Macro instructions at "ref" must end with a direction to new instructions or the RETURN ending statement.

=CALL(ref)

Causes the current location in the current Macro instruction to be saved and the Macro instruction located at "ref" to begin execution. Once the Macro is through executing the instructions at "ref", CALL automatically returns the Macro to the next instruction below the CALL instruction.

The first cell in the Macro to be called should be the name of the Macro and the first formula to be evaluated will actually be in the second row of the Macro. A maximum of 15 levels of Macro nesting is allowed!

Example:

	A
	+-----+
1	MAINMAC
	Name of Macro
2	=SET.VALUE(B10,8)
	Sets the Value of Cell B10 of the Worksheet to 8
3	=CALL(A12)
	Starts Macro at Cell A12 of Macrosheet. Can also be referenced as #A12.
4	=SET.VALUE(B10,15)
	Sets the Value of Cell B10 of the Worksheet to the new value 15
5	=CALL(#A12)
	Starts Macro at Cell A12 of the Macrosheet
6	=RETURN
	Ends Macro and returns results to the Worksheet

=RETURN

Causes a Macro to end execution. This is automatically put at the end of all Macros when created with the recorder. You should put it at the end of all your Macros and Subroutine Macros. When used in a Subroutine Macro it causes Macro execution to continue at the next Macro instruction after the CALL Macro function.

The following function will introduce pauses during the execution of a Macro.

=DELAY(n)

Causes a time delay of "n" delays. The Amiga timer has a resolution of 10 delays per second so the smallest delay is 1/10 of a second.

=DELAY(10) - delay for 1 second
=DELAY(15) - delay for 1.5 seconds

The following functions will load in outside files during a Macro execution.

= SHOW("picturename",delaytime)

This function will display the file specified by "picturename" (You must enclose the file name in quotes). The file is assumed to be an IFF file containing an ILBM picture. Programs which generate such pictures include MaxiPlan, Deluxe Paint, Aegis Impact, etc. Low, medium and high resolution pictures may be shown. Delaytime is the time in 1/10th of a second that you wish to show the picture.

NOTE: You must have sufficient memory to perform this operation. If you have only 512K and you have a medium to large size Worksheet you probably don't have enough available memory.

Example:

=SHOW("DF1:PICTURES/MYPIC",100)

Will display Picture File named "MyPIC" for 100/10ths of a second or 10 seconds.

= EXEC.WB("programname","filename")

This function will execute the program specified in the file "programname" string (you must use quotes) and pass to it the optional argument "filename". If you specify the "filename" parameter it must be in quotes and the file must exist. Programs run in this fashion should be those that create icons for their data files that allow you to double click the icon to implicitly open the program (such as MaxiPlan and Impact).

NOTE: You must have sufficient memory to perform this operation. If you have only 512K and you have a medium to large size Worksheet you probably don't have enough available memory.

Example:

=EXEC.WB("DH0:MAXIPLAN/MAXIPLAN PROGRAM", "MYWKS")

= EXEC.CLI("programname","arguments","outputfile")

This will execute the file specified by "programname" (you must use quotes) and pass to it the command line arguments specified in the "arguments" string (again you must use quotes) and place the output (if any) in the file specified by "outputfile" (once again you must use quotes)

NOTE: You must have sufficient memory to perform this operation. If you have only 512K and you have a medium to large size Worksheet you probably don't have enough available memory.

Example:

=EXEC.CLI("C:DIR",5 "#?", "MYOUTPUTFILE")

The following functions are used for interaction with a user during the execution of a Macro.

= INPUT("prompt string")

This function will display a Requester with a heading of the text "prompt string" and an input string gadget. The prompt string for the heading must be in quotes. During execution of the Macro, the user can type in the string gadget of the Requester, and then the result of this function is placed in the current cell. The input is interpreted the same as the input to the ANALYZE function. INPUT returns 0 if the user entered a label, 1 if the user entered a number and 2 if the user entered a formula.

Example:

B

- +-----+
- 1 **GETCONFIRMATION**
Name of Macro
 - 2 **=SELECT(B5)**
Select a place to store results on Worksheet
 - 3 **=INPUT("Confirm Y/N:")**
Puts up the text "Confirm Y/N" on the screen and accepts user's data
 - 4 **=LIF_GOTO(B5 = "Y",#A32)**
Compares text string in cell B5 of Worksheet; if it matches then go to cell A32 of the Macrosheet ...*Macro Continues*

=RESPONSE (prompt-string,yes-string,no-string)

Displays a system-type message in the upper left portion of the screen with two buttons. You supply the text for the message as well as the text for the buttons. All text strings in the RESPONSE arguments must be in quotes. Keep all text short. RESPONSE returns 1 if the user clicks the LEFT button and 0 if the user clicks the RIGHT button.

=MESSAGE(center,delay,'string1','string2',... 'string8')

Displays a message on the screen. Up to 8 strings of text may be included. The center parameter indicates if text is centered or left justified. Delay indicates the length of time in seconds the OK button is inoperative, or the minimum time the message is displayed. Clicking on the OK button clears the message from the screen. Text strings must be surrounded by quotes. Delay is calibrated in 1/10th of a second.

Options for Center Parameter

0 - Left Justified

1 - Centered

If a Cell Address is specified instead of a string, then the contents of that Cell will be converted to a string, following that cell's format rules and included in the message displayed on the screen. The cell address may be an absolute location, a CELL function or a defined name. These refer to Cells in the current Worksheet NOT THE MACROSHEET!

Examples:

=MESSAGE(1,0,"You have not selected a range")

This Macro lets the user click the OK button immediately and it will be centered in the Message Box on the screen.

MESSAGE(0,100,"Total Dollars for this month",#A5)

This Macro displays the message for 10 seconds and then removes the message.

=INPUT("Please enter your name")

=MESSAGE(1,100,"Thank you",CELL(0,0),"for entering your name")

This two Macro Function sequence asks the user for input, stores that input into the currently selected cell in the Worksheet and then uses the CELL function to refer to the currently selected cell in a message.

The following functions are used to determine a new location for the Active Cell. **Note: the CELL function is a Worksheet built-in function and will not be found on the Macro Function Selector window.**

CELL(dCol,dRow)

CELL is only to be used as a parameter to function expecting a "ref". It cannot be used by itself. Returns the grid location of a Cell relative to the Active Cell. dCol and dRow are how far to offset from the active cell. If they are negative then they refer to a Cell to the left and/or up from the Active Cell. If they are positive then they refer to a Cell which is down and/or to the right from the Active Cell.

Examples:

CELL(0,0)

Current Active cell

CELL(0,2)

Cell which is in the same Column but two Rows down from the Active Cell.

=SELECT(CELL(-2,3))

Select a Cell which is two Columns to the left and three Rows down from the current Active Cell and make it the Active Cell.

Delta values that are outside the Range of the Worksheet are truncated at the edge of the Worksheet. This is useful to use to reference Row 1 from any position. Use CELL(....,-65,536) or to reference Column A use CELL(-65,536,...)

A Macro that would enter a Sum function to sum a list of numbers that you just entered would be:

C

+-----+

25 SUMIT

Name of Macro

26 =DOWN(1)

Move down one row

27 =ANALYZE("=SUM(CELL(-65,536,0):CELL(-2,0))")

Enter the sum of Cells in the Row starting at Cell 65,536 columns back from the Active Cell and stopping 2 Columns back from Active Cell

28 =RETURN

Return to Worksheet and display result

=SELECT.CR(Column expression, Row expression)

Selects the Active Cell by evaluating an expression to define the Column and then another expression to define the Row of the Cell Address for the new Active Cell. Often this Macro function is used in conjunction with the Macro functions ROW.NUMBER and COL.NUMBER. Note: SELECT.CR and ROW.NUMBER AND COL.NUMBER designate the first row and first column as zero, "0".

Example:

=SELECT.CR(0,2)

Selects the Cell A3.

=ROW.NUMBER(reference)

Returns the Row Number of the reference on the Macrosheet where the instruction ROW.NUMBER appears.

=ROW.NUMBER (CELL(0,0))

Gives the Row number of the currently selected Cell.

=COL.NUMBER(reference)

Returns the Column number of the reference.

=COL.NUMBER(CELL(0,0))

Gives the Column number of the currently selected Cell.

The expression to define a Column or a Row can be either a reference to a Macro instruction, a nested Macro using the CELL function, or direct statement. An example, of a direct statement is SELECT.CR(5,7) . The Indicated the Cell Address is F7, since E is the 5th Column and 7 is the 7th Row.

Example: The Macro below will copy the contents of the Active Cell to the Cell in the same Row but 3 Columns to the right.

```

      A
+-----+
3  COPY
      Name of Macro
4  =Down(1)
      Move down one Row
5  =ROW.NUMBER(CELL(0,0))
      Find Row number of Cell reference
6  =COL.NUMBER(CELL(0,0))
      Find Column letter of Cell reference
7  =SELECT.CR(#A6,#A5)
      Select Cell with Column letter from Macro instruction at Cell Address on the
      Macrosheet A6, and Row number from Macro instruction at cell address
      A5 of the Macrosheet.
8  =COPY
      Copy from selected Cell to Clipboard
9  =SELECT.CR(#A6+3,#A5)
      Select Cell 3 Columns to the right of Column letter from Macro instruction A6,
      and Row number from Macro instruction A5.
10 =PASTE
      Paste contents to selected cell from Clipboard
11 =IF_GOTO(B2>0,#A4)
      If the content of Cell B2 of the Worksheet is greater than 0,
      then go to Cell A4 of the Macrosheet

```

The following functions are used to execute copy, cut, and paste between Worksheets.

=WKS.ID

Returns an internally generated number for the currently open Worksheet to the location on the Macrosheet where the instruction WKS.ID appears. Since it looks at the current Worksheet, no argument is specified.

=SWAP.WKS()

Requires two open Worksheets. Makes the non-selected Worksheet the active Worksheet.

=SELECT.WKS(WKS.ID#)

Selects the Worksheet denoted by the identification number as the active Worksheet. You must use the function WKS.ID# to assign the number since there is no way to predict which order the system will assign ID's to Worksheets.

	+-----+
1	Open Worksheet
2	= WKS.ID Select currently active Worksheet
...	and returns ID to cell A2
...	
12	=SELECT.WKS(#A2) Make active Worksheet identified at cell A2
13	= RETURN

The following functions are used to specify Printer Preferences on the Workbench during the execution of a Macro. These functions are used if you are creating a Macro to put out a report which requires an adjustment of printer commands in order to get the desired type of output.

=GET.PRINT.PREFS(opt)

Opens up the Workbench and activates Printer Preferences. Options differentiate between a black & white printer and a color printer

0 - black & white

1 - color

=SET.PRINT.PREFS(main,opt1)

Resets and saves the Print Preferences selected by the different options specified in the function arguments. If more than one Print Preference is to be set, then need to use this Macro function for each setting.

Main	Opt1
0 - Type Size	0 - Pica
	1 - Elite
	2 - Fine

- 1 - Print Quality 0 - Draft
 1 - Letter
- 2 - Spacing 6 - 6 Lines per inch
 8 - 8 Lines per inch
- 3 - Left Margin Specify Character Location
- 4 - Right Margin Specify Character Location
- 5 - Image 0 - Regular
 1 - Negative
- 6 - Aspect 0 - Horizontal
 1 - Vertical
- 7 - Shade 0 - Black & White
 1 - Grey
 2 - Color
- 8 - Threshold Specify 1 - 15
- 9 - Paper Size 0 - U.S. Letter
 1 - U.S. Legal
 2 - Narrow Tractor Feed
 3 - Wide Tractor Feed
 4 - Custom
- 10 - Number Lines Specify Number of Lines

The following functions are used to gather information about the current Active Cell or the current selected Range.

=SIZE.ROWS()

Returns the number of Rows of the current selected Range. Useful when you want a Macro to operate on the currently selected Range.

=SIZE.COLS()

Returns the number of Columns of the current selected Range. Useful when you want a Macro to operate on the currently selected Range.

=CELL.TYPE(reference)

Returns the type of the contents of the Cell denoted by the reference. CELL.TYPE (CELL(0,0)) gives the type of the currently selected Cell.

Options for CELL.TYPE function

-1	Empty Cell
0	Label
1	Value
2	Formula

=BEEP()

Causes MaxiPlan to emit a bell tone through the audio ports.

Chart Menu Macro Functions

The following Macro functions are used to design a Chart, Draw a previously specified Chart, Close a Chart, and Remove a Chart.

=DRAW.CHART(Chart #)

Draws a specified Chart in the Chart Drawing Window. The argument for DRAW is one of the eight Chart numbers.

=CLOSE.CHART(Chart #)

Closes an open Chart displayed in the Chart Drawing Window. The argument for CLOSE is the Chart number of the open Chart.

=MAKE.CHART(Type #)

Specifies a Chart for a previously selected Range of Data. The argument for MAKE.CHART is one of the Chart Type Codes listed below:

0 - Bar	5 - 3D Bar
1 - Line	6 - Stack Bar
2 - Pie	7 - Step
3 - Area	8 - Hi-Lo
4 - X-Y	9 - 3D Pie

=REMOVE.CHART(Chart #)

Removes the Chart number indicated in the argument.

Chapter 26

SAMPLE MACRO PROGRAMS

The real power of Macros is revealed in their application. With only a few lines of instructions, you can make MaxiPlan Plus perform feats which would require hundreds of line of code if you created your programs in a computer language such as Basic.

This chapter contains two sample programs to give you a flavor of how to put together a Macro. They are intended to be the genesis of your own programs. Each attempts to illustrate different techniques for using Macro Functions that you can incorporate in your own Macros.

Example Macro: Entering Data in a Database

The following example incorporates several types of Macro functions. Hopefully the variety of functions used will help you recognize applications for Macros in your everyday work with MaxiPlan Plus and its simplicity will encourage you to try your hand at designing a Macro for yourself.

The objective of this Macro is to prompt the user to insert a name, street address, and city, state, and zip code into a Range in a Worksheet devoted to a Database. Messages prompting the user are displayed in special windows with special places provided for keying in the data, and even an error message is displayed if the task is not performed properly.

This Macro can be invoked anywhere on the Worksheet. It automatically takes you to a Range named "Scratch" where your data entry is Copied to the Clipboard and then Pasted in the Range named "Database" in the proper Cells in the Worksheet.

```
A
+-----+
1  ENTER.DATA.MAC
2  =OPEN.WKS('MAXIPLAN DATA:WORKSHEETS/ENTER.DATA')
3  =MESSAGE(1,0,'ENTER DATABASE DATA or','ENTER Q TO QUIT')
4  START
5  =SELECT(SCRATCH)
6  =INPUT('ENTER NAME or Q to Quit')
7  =IF_GOTO(#A6<>0,'ERROR')
8  =LIF_GOTO2(CELL(0,0)='Q','END')
9  =CALL(#B1)
10 =GOTO('START')
11 END
12 =SELECT(SCRATCH)
13 =CLEAR
```

```

14 =RETURN
15
16 ERROR
17 =MESSAGE(1,0,'PLEASE Enter Alpha Type Data')
18 =GOTO('START')
19 RETURN

```

B

+-----+

```

1 ENTER
2 =COPY
3 =SELECT(DATABASE)
4 =DOWN(1)
5 =INSERT.ROW
6 =DOWN(-1)
7 =PASTE
8 =SELECT(CELL(1,0))
9 =INPUT('ENTER ADDRESS')
10 =IF_GOTO(#B9<>0,#B9)
11 =SELECT(CELL(1,0))
12 =INPUT('ENTER CITY,STATE,ZIP')
13 =IF_GOTO(#B12<>0,#B12)
14 =RETURN

```

A

+-----+

```

1 ENTER.DATA.MAC

```

```

2      Name of the Macro
  OPEN.WKS('MAXIPLAN DATA :WORKSHEETS/ENTER.DATA')

```

Opens the Worksheet file called Enter.Data in the drawer titled Worksheets on the floppy disk named Maxiplan + 1.6B Disk.

```

3      =MESSAGE(1,0,'ENTER DATABASE DATA or','ENTER Q TO QUIT')

```

Causes the Display of a Message box with two lines of text. The top line is "ENTER DATABASE DATA or" and the second line is "Enter Q to Quit". The first code "1" indicates the lines of text in the Message Box are to be entered in the box. The second code "0" indicates the length of time the OK Button in the Message Box is inoperative. Thus as soon as this Message Box is displayed, the user can click on the OK Button and bring up the next prompt.

```

4      START

```

This is a label the creator of the Macro inserted to help them find the beginning of the active part of the program. It is not displayed when the Macro is run, and is only seen on the Macrosheet. The label is useful to describe what is going on in the Macro in addition to being a point of reference in the Macro.

```

5      =SELECT(SCRATCH)

```

Selects the named Range "Scratch" on the Worksheet. This Macro assumes the Range has been pre-defined and named.

6 =INPUT('ENTER NAME or Q to Quit')

Causes the display of a Prompt Box which has the text "ENTER NAME or Q to Quit". The Prompt Box includes a special spot for keying in data. This data is automatically placed in the Active Cell of the Worksheet. To help screen for errors in data entry, the INPUT Macro function automatically returns a code to describe the type of data entered. "0" is returned for a text string, "1" for a number, and "2" for a formula.

7 =IF_GOTO(#A6<>0,'ERROR')

This Macro function tests for accuracy of the data entered, and is an example of nested Macro functions. The Macro function IF_GOTO asks for an evaluation of a statement and if that evaluation is true, to go to the indicated location on the Macrosheet. In this case, it is evaluating the contents of cell A6 on the Macrosheet to see if it is not "0". If the code returned from the INPUT Macro function is not "0", i.e. it is either "1" for a number or "2" for a formula, then the next Macro instruction can be found at the Range named "ERROR" on the Macrosheet. Thus if a formula or a number is entered instead of alpha text, the Macro moves to the Range of the Macrosheet named Error. If text is entered, then it goes onto the next Macros statement.

The following is a Subroutine Macro that is in the Named Range of the Macrosheet called "ERROR". It is invoked by directing the execution of the Macro to the first Cell of the Subroutine Macro.

A

16	ERROR	+
----	-------	---

The name of the one Cell Range "ERROR", which is also the first Cell of the Subroutine Macro called "ERROR".

17 =MESSAGE(1,0,'Please,Enter Alpha Type Data')

A Message Box with centered text, and no delay on utilization of the OK Button is displayed on the screen with the prompt "Enter Alpha Type Data".

18 =GOTO('START')

After displaying the Error Message, the Macro is directed to reenter the data.

19 =RETURN

Ends the Macro and returns the results to the Active Cell on the Worksheet.

Back to the Main Macro

A

8	=LIF_GOTO2(CELL(0,0)='Q','END')	+
---	---------------------------------	---

This evaluates to see if the text string entered is a "Q" for quit. If the evaluation is true, then the Macro is directed to the Label on the Macrosheet named "END", which then leads to the instruction with the Macro function. The 2 indicates the evaluation of the text is not case sensitive.

9 =CALL(#B1)

Saves the results of the Macro to the Active Cell and moves the execution of the Macro to the Subroutine Macro starting at #B1 on the Macrosheet. Since the Subroutine is in a different Column than the Main Macro, it must be referred to by its Cell Address.

10 =GOTO("START")

Returns the execution of the Macro to the next instruction after the CALL instruction at #A9 (i.e. #A10). CALL by definition goes to a subroutine and then after the subroutine is finished returns to the next instruction of the Macro. The instruction at #A10 is for another loop through the program. As long as the user keeps entering text strings other than at each of the INPUT functions, the Macro will continue to loop through several executions. If and when the user keys in "Q" at the Message Box in instruction #A2, the Macro will then move to the named cell "END" and then execute the instructions to return to the Worksheet in Cells #A11:#A14 of the Macrosheet.

11 END

This is a label to indicate where on the Macrosheet are the instructions for the ending routine for the Macro.

12 =SELECT(SCRATCH)

Selects the named Range of the Worksheet "SCRATCH".

13 =CLEAR

This is equivalent to the Clear command on the Edit Menu. This removes the data and the format from the current selected area which is the Range named "SCRATCH".

14 =RETURN

Ends the Macro and returns the results to the active Worksheet.

15

This Cell was deliberately left blank to interrupt the execution of the Macro.

The following is the set of instructions for the Subroutine "ENTER".

B

+-----+
1 ENTER

Name of the Subroutine Macro

2 =COPY

Copies the contents of the Active Cell to the Clipboard.

3 =SELECT(DATABASE)

Selects the Range named "DATABASE" in the Worksheet.

4 =DOWN(1)

Moves the Active Cell down one Row.

5 =INSERT.ROW

Inserts a new Row above the Active Cell.

6 =DOWN(-1)

Moves the Active Cell up one Row to the newly inserted Row.

7 =PASTE

Pastes the contents of the Clipboard to the Active Cell.

8 =SELECT(CELL(1,0))

Moves the Active Cell over one Column to the right.

9 =INPUT('Enter Address')

Displays a Prompt Box with the Message "Enter Address" and a place to enter the appropriate data.

10 =IF_GOTO(#B9<>0,#B9)

Evaluates the results returned from the INPUT function at Cell B9 on the Macrosheet. If the result is "0" or Not True, i.e. a text string, then pass down to execute the next Macro instruction. If the result is True, i.e. "1" for a number or 2" for a formula, then go to the Cell reference B9 to re-input the information. This returns you to the INPUT Macro instruction in Macrosheet cell #B9.

11 =SELECT(CELL(1,0))

Moves the Active Cell over one Column to the right.

12 =INPUT('Enter City,State,Zip')

Displays a Prompt Box with the Message "Enter City,State,Zip" and a place to enter the appropriate data.

13 =IF_GOTO(#B12<>0,#B12)

Performs the same task as the instruction at #B12. It evaluates for a text string , and if it is not a text string it returns the cell to re-input the text string correctly.

14 =RETURN

Ends the Subroutine Macro and returns to the main Macro.

Last instruction of the Macro.

A

+-----+
10 =GOTO('START')

Example Macro: Printing Invoices

This example demonstrates the ability of a Macro to move the Active Cell around the Worksheet by keeping track of the Row number and Column number and performing calculations to move the Active Cell to a new site. It also shows how MaxiPlan can insert information at a specific location on the Worksheet and then print out a Range on the Worksheet.

Below is shown a copy of the section of the Worksheet devoted to the invoice with the location of the Named Ranges inserted to help explain how the PRT.INVOICE.MAC operates.

D	E	F	G	H
+-----+				
1				
2				
3				
4				
5	Widgets USA			June 7, 1987
6	P. O. Box 9000			
7	Richton, WA 90907			
8				
9				
10	Ship To: NAMEDEST			<---- Named Range
11	STREETDEST			<---- Named Range
12	CITYSTATEDEST			<---- Named Range
13	ZIPDEST			<---- Named Range
14				
15				
16	<u>Quantity</u>	<u>Description</u>	<u>Price</u>	
17	1	Deluxe Widget	\$59.95	
18				
19				
20				
21		Subtotal	59.95	
22				
23		Freight	5.00	
24				
25		Total	64.95	

The PRT.INVOICE.MAC also uses the Named Range DATABASE described below.

A	B	C	D	E	F
+-----+					
1	Name	Street	City/ST	Zip	Ord Ship
2	Brown, Jim	Rt #1	Worcester, MA	01234	yes yes
3	Davis, Jeff	137 Fell St.	Panama, NY	17568	
4	Carter, Jim	382 Sunder	Andover, MA	01965	yes
.
.
.
.

A
+-----+
1 PRT.INVOICE.MAC
2 START
3 =SELECT(DATABASE)
4 =DOWN(1)
5 =ROW.NUMBER(CELL(0,0))

```

6  =COL.NUMBER(CELL(0,0))
7  =LIF_GOTO(CELL(4,0)<>'yes','notthisnone')
8  =LIF_GOTO(CELL(5,0)='yes','notthisnone')
9  =COPY
10 =SELECT(NAMEDEST)
11 =CLEAR
12 =PASTE
13 =SELECT.CR(#A6+1,#A5)
14 =COPY
15 =SELECT(STREETDEST)
16 =CLEAR
17 =PASTE
18 =SELECT(#A6+2,#A5)
19 =COPY
20 =SELECT(CITYSTATEDEST)
21 =CLEAR
22 =PASTE
23 =SELECT.CR(#A6+3,#A5)
24 =COPY
25 =SELECT(ZIPDEST)
26 =CLEAR
27 =PASTE
28 =SELECT(INVOICE)
29 =PRINT(1,'test')
30 =SELECT.CR(#A6+5,#A5)
31 =ANALYZE('yes')
32 notthisone
33 =SELECT.CR(#A6,#A5+1)
34 =IF_GOTO(ROW.NUMBER(CELL(0,0))<ROW.NUMBER(END_DATA),#A5)
35 =RETURN

```

The following is an explanation of each of the instructions of the Macro.
PRT.INVOICE.MAC

Name of the Macro
2 START

This is a label for locating the start of a looping routine.
3 =SELECT(DATABASE)

The above Macro instruction looks at a Named Range on the Worksheet called DATABASE and selects the top left Cell as the Active Cell.
4 =DOWN(1)

Moves the Active Cell Down one Row.
5 =ROW.NUMBER(CELL(0,0))
6 =COL.NUMBER(CELL(0,0))

The above two instructions determine respectively the Row number and then the Column number of the Active Cell.

```
7 =LIF_GOTO(CELL(4,0)<>'yes','notthisone')
```

Once the Row number and Column number are obtained, the Macro evaluates the Cell 4 Columns over in the same Row and sees if the text string in that Cell does not match the string "yes". If there is no match, that means this particular Record or Customer has not placed an order, there is no need to print an invoice. The comparison expression is "True" and thus the Macro is directed to the Label on the Macro "notthisone". If the expression is "False", that is the Customer has placed an order, the macro drops down to the next instruction. That Active Cell on the Worksheet has not actually moved, the Macro merely looks to evaluate certain conditions.

Note that the Label must be in quotes and it must be in the Column of the Macro. To refer to other areas of the Macrosheet not in the same Column as the Macro, they must be referred to by Cell Address.

```
8 =LIF_GOTO(CELL(5,0)='yes','notthisone')
```

The next instruction of the Macro looks for a "yes" in the Column for Ship. If there is an exact match, this means the order has been shipped and thus there is no need to print an invoice. Thus the Macro is "True" and the Macro is instructed to go to Label on the Macro "notthisone". However, if there is no yes, then an invoice needs to be printed, thus the Macro drops down to the next instruction. The Active Cell on the Worksheet is still at the top left Cell of the Named Range DATABASE. This is the Column containing the Name of the Customer.

```
9 =COPY
```

This instruction copies the contents of the Active Cell, customer name, on the Worksheet and places them in the Clipboard.

```
10 =SELECT(NAMEDEST)
```

Now the Macro moves the Active Cell to the Named Range area of the Worksheet called "NAMEDEST".

```
11 =CLEAR
```

Before pasting in any new information, the Macro clears the current contents from the Named Range "NAMEDEST".

```
12 =PASTE
```

The instruction pastes the contents of the Clipboard, the customer name, to the Named Range "NAMEDEST" on the Worksheet.

```
13 =SELECT.CR(#A6+1,#A5)
```

Next the Active Cell is moved to the Cell on the Worksheet whose Column number is the contents of Cell #A6 on the Macrosheet plus one. Note that the instruction at #A6 determined the Column number of the site of the original location of the Active Cell, by adding one the Active Cell is moved over one Column. The Row number is obtained from Macrosheet Cell #A5. By not adding or subtracting from the Row number, the Active Cell stays in the same Row. This is the Column of the Database containing the Street for the Customer.

14 =COPY

This copies the street address for the customer found at the new Active Cell on the Worksheet into the Clipboard.

15 =SELECT(STREETDEST)

Now the Active Cell moves to the Named Range "STREETDEST".

16 =CLEAR

This instruction removes information at the Named Range "STREETDEST".

17 =PASTE

The instruction pastes the contents of the Clipboard, the customer street address, to the Named Range "STREETDEST".

18 =SELECT(#A6+2,#A5)

This instruction calculates a new location for the Active Cell which is 2 Columns over from the site where the Active Cell began and remains in the same Row. This is the Column containing the information "City and State" for the customer.

19 =COPY

Now the contents of the Clipboard are replaced by the City and State for the customer.

20 =SELECT(CITYSTATEDEST)

This instruction moves the Active Cell to the Named Range "CITYSTATEDEST".

21 =CLEAR

Data at the site of the Active Cell is removed by this instruction.

22 =PASTE

The contents of the Clipboard, the City and State for the customer are pasted at the site of the Active Cell.

Instructions at the range #A23:#A27

These instructions cycle the Macro through the process of moving the Active Cell to the Column in the Database where the zip code resides, copies this information into the Clipboard, then moves the Active Cell to the location "ZIPDEST" on the Worksheet and pastes the contents of the Clipboard at this new site for the Active Cell.

=SELECT(INVOICE)

This Macro instruction selects the Named Range of the Worksheet called "INVOICE". "INVOICE" is the Range (D1:H25).

=PRINT(1,'test')

Now the selected Range "INVOICE" is being printed to the serial port as indicated by the first argument "1" to a file named "test". By including a file name, this Macro will fully execute even if it is executed on a system without a printer. Since most users will have printers, this instruction would typically be: =PRINT(0) which outputting directly to the printer.

```
=SELECT.CR(#A6+5,#A5)
```

This moves the Active Cell to the site five Columns over in the same Row based on the Column and Row numbers at Cells #A6 and #A5. This is the Cell that was evaluated for a "yes" at the Macro instruction at Cell #A8, which looks for a "yes" in the Ship Column for the customer.

```
=ANALYZE('yes')
```

This inserts the text string "yes" so that the next time this Macro is executed it will not print an invoice for this particular customer.

```
notthisone
```

Label on the Macro which is the beginning of a Subroutine. It can be referred to by its name within quotation marks since it is in the same Column as the Macro.

```
=SELECT.CR(#A6,#A5+1)
```

Now the Active Cell is instructed to move to the Cell one Row below the original Cell Address. This is the Name Column for the second Record in the Database named DATABASE.

```
=IF_GOTO(ROW.NUMBER(CELL(0,0)<ROW.NUMBER(END_DATA),#A5)
```

This is the Macro instruction which determines if the Macro evaluates the next Record to see if an invoice should be printed or instead directing the Macro to go onto the last instruction which terminates the Macro. The IF_GOTO statement translates that if the current cell Row number is less than the Row number of the Named Range END_DATA, then the Macro is instructed to return to the beginning and evaluate another customer Record. END_DATA a named one Cell Range that resides below the last Record of the Database, which signals the end of the Records.

```
=RETURN
```

This instruction ends the execution of the Macro.

For additional example applications of Macros, please turn to the Utilities/Data Disk.

Appendix A

Installation

HOW TO INSTALL MaxiPlan

Installation of MaxiPlan is similar to that of any other Amiga program. It does require version 1.2 or later of Amiga Kickstart, thus do not attempt to install MaxiPlan without the correct Amiga Kickstart.

First: Make Backup Working Copies of MaxiPlan

MaxiPlan software is not copy protected. Thus it is simple and prudent to make several back up copies of your MaxiPlan software program. Before making back up copies, you should check the position of the Write Protection Notch of the original program disk and any accompanying data disks. To copy from a disk, the Write Protection Notch should be in the up position such that you can see through the notch. Thus you will not be able to accidentally copy over the contents of the original disk. The following steps explain how to install the program on either a single floppy disk drive system, a two floppy disk drive system, or a system with a hard disk. Once the Program Disk icon appears in the Workbench Window, you can copy the contents of the disk onto a blank initialized disk.

MaxiPlan 500 and MaxiPlan Plus both come with Workbench 500/2000 installed. If you have an Amiga 1000 and will be using something other than U.S. keymaps, you will need to install new keymaps definitions from your Workbench. This can be done with the copy routine under CLI as follows:

Copy "Your Workbench Disk:devs/Keymaps" to "MaxiPlan Disk:devs/Keymaps" ALL

Single Floppy Disk Drive Systems

1. Boot Workbench from MaxiPlan Program disk. See your Amiga manual for more about loading the Workbench.

After it is loaded, the MaxiPlan Program Disk icon will appear on the Workbench Window. At this point, it is advisable to make your copies of the MaxiPlan program disk. To make copies, eject the program disk and insert a blank initialized disk. Then click on the MaxiPlan program disk icon, move it on top of the blank disk icon and release the mouse button. You will be asked to swap disks several times. Simply follow the promptings to complete the copying process. This will copy the contents of the program disk to the blank disk. This process can be repeated as many times as you wish.

You should now set aside the original program disk and insert one of the working copies of the MaxiPlan Program Disk in the drive.

2. Double Click on the MaxiPlan Program Disk Icon

This will bring up a Window for the Disk displaying several Drawer Icons including the MaxiPlan Drawer.

3. Double Click on the MaxiPlan Drawer icon

A window will be displayed with an icon for the MaxiPlan program; you should click on this icon with the left mouse button.

4. Double Click on the MaxiPlan Program Icon

You will then be presented with the MaxiPlan Control Window, as shown on page 4 - 1.

This is the point of entry into the MaxiPlan program. The window has been described in Chapter 4: "ENTERING MaxiPlan: THE CONTROL WINDOW".

Two Floppy Disk Drive Systems

Installation of MaxiPlan on a two floppy disk drive system does not differ significantly from a one floppy system. Once the Kickstart Disk, and then the Workbench Disk have each been loaded, you should insert a MaxiPlan Program Disk in one floppy drive and then a blank initialized Disk in the second drive. Then when copying the original program disk you can avoid having to do any disk swapping.

Hard Disk Systems

After making a duplicate of the MaxiPlan Program disk, open one of the copies of the Program disk and copy the complete MaxiPlan Drawer to the root directory of the hard disk. This is very important or else you will loose access to the MaxiPlan Help Files and desk accessories if you only copy the MaxiPlan program. Be sure to use the Root directory for copying the MaxiPlan Drawer.

In addition MaxiPlan Charts use a special font for high resolution or interlace mode. If you do not use high resolution mode, you need not install the TRANTOR font. To install the font open CLI on your hard disk system device. Place the MaxiPlan disk in drive DF0: and enter the following:

```
CD FONTS <CR>
MAKEDIR TRANTOR <CR>
COPY DF0:FONTS/TRANTOR.FONT TO TRANTOR.FINT <CR>
COPY DF0:FONTS/TRANTOR/16 TO TRANTOR/16 <CR>
```

You have made a new directory under the directory FONTS, have copied TRANTOR.FONT to the FONTS directory, and copied the file "16" to the subdirectory TRANTOR.

Appendix B

GLOSSARY

Absolute Cell Reference - A method of referring to a cell address in a Formula such that it does not change, or remains constant when replicating the Formula.

Active Cell - The Cell address where the Cursor is currently entering Data.

Active Drive - The floppy drive or hard disk drive currently being accessed by the computer.

ALT - The abbreviation for the Alternative Key. When pressed with another key, it changes the Command executed by the key to another Command.

AmigaDOS - The Amiga's disk operating system.

Amiga Keys - The keys on either side of the space bar on the key board. When pressed with another key, it directs the execution of a Command. The Left Amiga Key is used for System type commands, while the Right Amiga Key is devoted to substitute Program commands.

Argument - The expression upon which a Function acts upon.

Backspace - The Backspace key moves the Cursor backwards and erases previously entered Data.

Back Up - The process of making an archive Copy of a Worksheet.

Boot - To start a computer. It comes from the phrase "to pick yourself up by your own bootstraps". The computer must first find a program to tell it how to run any other program.

Branching - The evaluation of an expression which considers several alternative subsequent actions. The action chosen is based on the results of the evaluation against some predetermined criteria.

Calculation Order - The hierarchy for performing a series of calculations. The order could be by following interrelated Cell References, or by going from left to right across Rows, or up and down Columns.

Glossary

Cell - The intersection of a Row and Column on a worksheet. This is where Data is entered.

Cell Address - The combination of Row number and Column Letter which designates the location of a specific Cell.

Cell Note - Either a written or spoken comment attached to Cell to explain the contents of the Cell.

Chart - MaxiPlan pictorial representation of data. A Chart can be displayed on the screen or printed in hard copy.

CLI (Command Line Interpreter) A program that allows the user to execute AmigaDos commands using the keyboard, as opposed to the Workbench/mouse approach.

Column - A vertical collection of Cells. A Column is designated by a letter name. MaxiPlan has 512 Columns.

Command - An instruction to the computer. Executing a Command can be as simple as pressing a function key, clicking on a menu item. A complex command could entail constructing a series of functions in one statement.

Conditional Macro - A Macro Command which chooses between alternatives based on the results of evaluation of data.

Control Window - The first window to appear after MaxiPlan is loaded.

Copy - The process of duplicating the contents of either a Cell, a Range, or a Worksheet.

<CR> - This symbol stands for press the Return Key on the key board. Pressing the Return Key signifies your agreement with an entry.

Criteria - Parameters established for selecting Records in a Database.

Cursor - The character space where Data is currently entered. Always found in the Active Cell.

Cursor Keys - The arrow keys which move the cursor about the screen. The cursor can also be moved by the Mouse or by keying in a specific Cell Address.

Cut - Removing the contents of a Cell or a Range from a specific location. They will remain in the Clipboard Memory until they are Pasted into another location.

Data - The facts and figures that are entered into the Worksheet.

Database - A collection of Data that can be reorganized based on the specific criteria of an Index. Within MaxiPlan, any Range of Cells can be treated as a Database within the Worksheet. Up to 63 separate Databases can be defined for any one MaxiPlan Worksheet.

Default - A MaxiPlan convention that will prevail unless the user specifically designates an alternative available option.

DEL - The abbreviation for the Delete Key. The Delete Key removes entered Data at the Cursor location and moves the Cursor backwards.

Delete - The removal of either Data with the DEL Key or Backspace Key.

- The removal of a Column or Row from the Worksheet. The deletion of a Column or Row is executed by selecting the Column or Row and then choosing the DELETE Menu Item from the COMMAND Menu.

- The selective removal of Records from a Database based on a pre-defined criteria.

Drawers - Places on the Amiga Workbench where you can store programs or files. Drawers are the visual Icons representing AmigaDOS directories. Double clicking on a Drawer will open a Window displaying Icons representing the programs or files in the Drawer or Directory.

Dynamically Linked - The option to elect an automatic updating of a Chart as changes in the Data of a Worksheet occur. Altering the Chart will likewise change the Data in the Worksheet.

Display - Either the process of showing an image on the CRT screen, or a reference to the CRT itself.

Drive - A hardware device which stores and retrieves Data for later access. Amiga conventions name the first Floppy Disk Drive of a computer system Drive DF0, the second Floppy Disk Drive of a computer system Drive DF1, and a Hard Disk Drive or Fixed Drive is called Drive DH0.

Edit - Revising previously entered Data.

Enter Data - The process of keying in Data and signifying your acceptance of the correctness of the Data by pressing either the Return Key or the Enter Key.

Enter Key - The equivalent of the Return Key on the numeric pad of the key board. This is to designate your decision to enter the Data as keyed into to a specific Cell.

Entry - Data that has been keyed in and accepted.

Error Message - A MaxiPlan message which describes an unacceptable action or Command to MaxiPlan and the corrective action to be taken.

ESC - The abbreviation for the Escape Key. This key will undo any Data that has been keyed in but not entered.

Glossary

Exporting a File - Formatting and sending a Worksheet File to another program.

External Reference - Referring to Data which resides in another Worksheet File. This can be accomplished by Linking Worksheets.

Extract - Selectively copying Records of a Database and pasting them onto a new area of the Worksheet.

Field - One type of Data associated with a Database. For example, the name of customer is usually in one Field and their address in another Field of a Database of customers. A Record is not complete until Data is entered into every Field of the Database.

File - The name of a Worksheet and the associated Data that the computer uses to access a particular Worksheet.

File Name - The name the computer uses to access, retrieve, and refer to a particular Worksheet.

Fill - The process of automating the entering of Data or a Formula into a Range.

Find - Locating certain Records in a Database based on a pre-defined criteria.

Format - The attributes which define how either a Cell, a Range or an entire Worksheet will look or sound. Attributes to be defined include: resolution, color selection, type face, alignment, decimal places, with or without commas, etc.

Formula - A statement of a series of Commands which usually entails the usage of Functions. The Functions are combined by the usage of Operators.

Function Keys - The ten keys which are located across the top of the Amiga key board. Each Function Key performs a specific Command. One set of Commands are executed by just pressing the Function Key alone, another set are executed by simultaneously pressing the Shift Key when pressing the Function Key for another set of commands.

<u>Function Key</u>	<u>Function Key Alone</u>	<u>Function Key with Shift Key</u>
F1	Calculate Now	Save
F2	Cut	Print
F3	Copy	Align
F4	Paste	Paste Data
F5	Clear	Clear Data
F6	Select Cell	E Z Sort
F7	Fill Right	Sort
F8	Fill Down	Find
F9	Insert Row	Select A1
F10	Insert Column	Select Last Cell

Function - A Pre-defined formula that performs specific calculations or actions. MaxiPlan has over 70 built-in, pre-defined Functions. Every Function is comprised of two parts: the Function name and the Argument. The Function name tells the computer which type of pre-

defined activity is to be performed, and the Argument tells the computer which set of Data is to be acted upon by the Function.

Gadget - A control device graphically represented on the Window for communicating with the program. A gadget is engaged by clicking on it with the Select (left) mouse button. Examples are Window Scroll Gadgets, Front/Back Window Gadgets, Close and Drag Gadgets.

Graph - A pictorial output of Data in a Worksheet. Also called a Chart.

Help - The support available with MaxiPlan to address problems as they occur with your usage of the program. Help is available from four sources:

- 1. On-Line Help which can be accessed at any point in the program with the Help Key. This brings up additional descriptions and suggestions which is context sensitive to the point in MaxiPlan where the Help Key is pressed.
- 2. Error Messages which prevent you from incorrectly interacting with MaxiPlan.
- 3. The Manual including the Tutorial and the Reference.
- 4. Tech Support from Oxix, Inc. at (213) 427-1227, 9:00 am to 5:00 pm Pacific Time, Monday through Friday.

Icon - A graphic image on the Workbench that represents a computer object such as a Disk Drive, Program or File.

IFF (Interchange File Format) - An Amiga software standard that allows for the interchange of graphic and sound files among different types of programs from different program developers. IFF supports numeric data, dates, pictures, text and sound.

Importing a File - Accessing and using a Worksheet File from another Spreadsheet program.

Insert - The Command on the Command Menu which adds a new Column or Row between existing Columns and Rows of a Worksheet.

Interactive Macro - A Macro which pauses during its execution and allows for user input of Data to direct the Macro's execution.

Key In - Enter data into a Worksheet by typing in the data from the keyboard.

Key Stroke - Pressing a key on the key board.

Kickstart - The part of the Amiga's operating system needed to boot the Amiga and run any program. On the Amiga 1000, Kickstart is loaded from disk into a protected area of RAM (called RAM-ROM); the Amiga 500 and 2000 models have Kickstart embedded in the hardware ROM.

Glossary

Label - The Text entered into a Cell of a Column or Row which describes the contents of the Cells within the Column or Row.

Linked Worksheets - Worksheets which provide Data for usage by another Worksheet.

Literal - Text output.

Load - The process of retrieving MaxiPlan from the disk into the computer.

Location - The Cell Address or Range Name of the Data.

Macro - A mini-program you can construct using the Macro Language of MaxiPlan Plus to execute repetitive tasks or calculations. A Macro remembers a complicated series of key strokes, mouse movements, menu selections, functions, formulas or cell references to be replayed at any time with one key stroke.

Macro Language - A collection of special Functions which automate many of the commonly used actions within a Worksheet such as Copy, pulling down a Menu, or referring to a specific Cell. It is a type of shorthand for building mini-programs. Macro Functions are only available with MaxiPlan Plus.

Macro Worksheet - This is a special type Worksheet associated with any MaxiPlan Plus Worksheet that contains all the mini-programs or Macros for the Worksheet. The Data entered into a Macro Worksheet are formulas which make up mini-programs that use the Data in the Worksheet or other Worksheets if a linking Macro is used. Normal numbers and text Data is not entered into a Macro Worksheet.

Mail Merge - This is special Utility for formatting Data in a Worksheet for export to a word processing program for insertion in forms, form letters, or mailing labels.

Menu - A collection of Commands that can be executed with the Mouse. A Menu is accessed or popped down by moving the Pointer while pressing the Menu (right) mouse button to the name of the Menu on the Menu Bar.

Menu Bar - The series of Menu names across the top of the MaxiPlan Worksheet.

Move - The action of cutting or copying a Cell or Range and pasting the Cell or Range at another location on the Worksheet.

Multitasking - The ability of a computer to do more than one task at a time; i.e. run more than one program at the same time.

Nested Parenthesis - The hierarchy of calculation is determined by placing each particular calculation within a series of parentheses. The first statement to be evaluated is in the inner most set of parenthesis. The results in the first calculation are used by the statement of the next set of parenthesis outward. The results of the second calculation are used in the statement in the next parenthesis, and so forth until all statements have been evaluated.

Operators - The actions performed within a Formula.

Operators include:

<u>Arithmetic Operators</u>	<u>Action</u>
+	Add
-	Subtract
*	Multiply
/	Divide
=	Equal to
^	Raise to the Power

<u>Logical Operators</u>	<u>Action</u>
=	Equal to
<	Less than
<=	Less than or Equal to
>	Greater than
>=	Greater than or Equal to
<>	Not Equal to

Operating System - The software program which manages the hardware devices such as the screen, disk drives, etc and manages the interface of application programs such as MaxiPlan with the hardware.

Password - A code that only allows certain users to have access to Protected Cells.

Paste - Placing a the contents of a Cell or Range in a new location on the Worksheet.

Pointer - An object, used for making selections, that moves on the screen as you move the mouse. The standard Amiga pointer is an arrow.

Protection - Limiting access to certain areas of a Worksheet to specific users by requiring them to identify themselves with the usage of a Password.

RAM (Random Access Memory) - Storage residing on a computer chip, any part of which can be read or written in a non-pre-defined, or random order as opposed to a sequential order like reading a book. This memory is used by the computer for storing data and executing its instructions.

Range - A collection of contiguous Cells in a Worksheet. A Range is specified by the Cell Address of the upper left hand Cell and the Cell Address of the lower right hand Cell separated by a colon (:). Example -A2:B5

Range Name - A Text character name for a Range for identifying a Range by using meaningful text rather than by the Cell Addresses included in the Range. For Example, all the Cells in Row 3 may contain Sales Data. Thus naming the Range of Cells in Row 3 "Sales" enables you to Reference the Range in Formulas as "Sales".

Glossary

Record - The information associated with one item from the population of items included in a Database. A different aspect or attribute of the item is entered into each of the Fields of the Database in order to fully describe the Record or item.

Record a Macro - MaxiPlan can be set up to automatically remember and store (Record) a series of key strokes, Menu selections or mouse movements.

Reference - Citing another Cell for use in a Formula.

Relative Cell Reference - A method of referring to a cell address in a Formula such that it does change when replicating the Formula.

Requester - A graphic box displayed on the screen which contains information and often requires the user to key in certain information such as a File Name. Usually the user must click on a button to either accept his entered data or to abort the current activity in MaxiPlan before MaxiPlan will allow the user to proceed further with the program.

ROM (Read Only Memory) - Computer storage, similar to RAM, except that it can only be read; the computer is not capable of writing to ROM memory. ROM is often used to store computer instructions that don't change such as the Amiga's Kickstart program in both the Amiga 500 and 2000.

Row - Horizontal collection of Cells usually identified by a number. MaxiPlan has 65,530 Rows.

Save - Archive the latest version of a Worksheet.

Save As - Making a duplicate copy of a Worksheet and saving it under a different file name.

Scroll Bar - Scroll Bar Gadgets allow the user to view information in the Window beyond the current viewing area of the Worksheet.

Scrolling - Changing the set of displayed Rows or Columns.

Select - Choosing a Cell, a Menu, a Menu Item, or a Function.

Sizing Gadget - A gadget that allows the user to resize the Window.

Sort - Ranking or changing the order of Records that are displayed in a Database.

Spreadsheet - The generic name for software programs such as MaxiPlan that are comprised of Cells and Rows for entering data primarily for mathematical manipulation of the data.

Text - Alpha characters.

Tools - An Amiga term for a program running on the Workbench. The Note Pad, Icon Editor, and Graphicraft are Tools.

Utility - A pre-set MaxiPlan task, such as Importing a Lotus 1-2-3 Worksheet or creating Mail Merge files.

Value - Treating a Number character numerically as opposed to treating it as a Text character.

Window - A framed area of the screen that can contain an independently running program and is usually manipulated with gadgets. The Amiga's multitasking operating system allows it to display many windows simultaneously.

Workbench - The Amiga's icon-based user software which allows the user to manipulate files, run programs, and perform other Amiga functions.

Worksheet - The collection of associated data including numeric data, labels, formulas, and named ranges displayed as Rows and Columns and saved to the disk as a MaxiPlan File name.

Zoom - Alternating between the regular view of the Worksheet and a reduced view which allows the display of more Rows and Columns.

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